ARTISAN

In This Issue

• Carbon monoxide alarms operate heating and ventilating systems in New York bus garages. Fresher air means higher output per man. Page 36.

• Radio commercials that change with the seasons prove effective in advertising program of Peoria heating contractor. Page 41.

• Cost control can mean profit instead of loss. Plugging the small loss-leaks is difficult but can be done. Page 56.

The Cover Picture

Sheet metal contractors installed this attractive store front themselves and saved a considerable sum of money. Page 50.

J-C representatives serve you

with America's largest and most complete warm air heating line, from 3,800,000 down to 50,000 Btu output

Supplementing Jackson & Church's extensive plant facilities is a network of factory representatives trained to supply you with the answers to your heavy-duty heating and industrial ventilation problems.

Our Engineering Department at Saginaw, backs these representatives to assist with your heating plans for industrial, commercial or residential installations.

J-C FURNACE DIVISION REPRESENTATIVES

Herbert F. Robinson
Box 617 — 145 N. Common St.
Lynn, Mass.

Roy E. Berg
120 Wall St. — Room 1701
New York, N. Y.

William Troescher
5629 Madison Rd.
Cincinnati, Ohio

M. F. Gerhauser
2407 Terminal Tower Bldg.
Cleveland 13, Ohio

J. B. Winston
333 Commonwealth Ave.
Aurora, Ill.

A. E. Duwe
3857 N. 42nd St.
Milwaukee, Wis.

Frank E. Young, Jr.
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Saginaw, Mich.

Roy C. Fulcher
Bellaire, Mich.

Lloyd H. Weir, Jr.
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Flint, Mich.

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Seattle, Wash.

J. D. Higgins, Jr.
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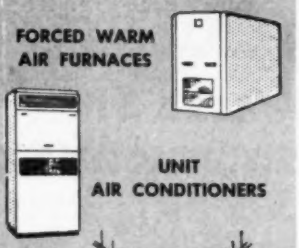
J-C

JACKSON & CHURCH COMPANY, SAGINAW, MICHIGAN

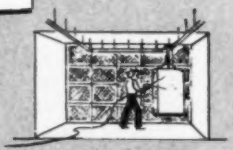
WORK WELL DONE SINCE '81

THERE'S AN RP *Air Filter for:*

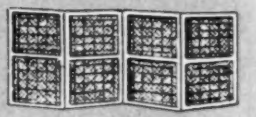
FORCED WARM AIR FURNACES



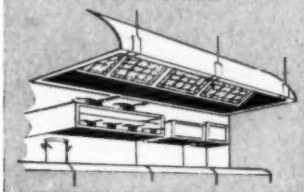
UNIT AIR CONDITIONERS



PAINT SPRAY BOOTH



CENTRAL SYSTEM FILTER BANKS



KITCHEN GREASE CANOPIES

ENGINE INTAKE

SPECIAL PURPOSE DESIGNS

Tell us your Air Filter needs and specifications

"Our house isn't smelly any more!"

. . . and now! — many small businesses, too, are natural prospects for amazing R P DUST and ODOR removing filters!

The revolutionary odor removal feature of new R P D-O Filters has produced many new sales possibilities in the field. Yes, now small businesses — restaurants, theatres, pet shops, veterinary offices, business offices — all are prospects for the D-O Filter. And — only R P can offer your customers the double function of highest efficiency dust removal plus the newest development in the forced air field — ODOR REMOVAL!

R P brings you extra profits too, from your sales of R P washable type filters which can be made odor removing too with D-O Kote, the dust and odor removing adhesive for home application. D-O Kote is available in handy, plastic squeeze-koter bottles for over-the-counter repeat sales.

Check the R P way to extra profits . . . write for complete information on R P dust and odor removing filters for homes and small business places.

Write RESEARCH PRODUCTS CORP., Madison, Wis., U. S. A.

RP . . . PRODUCTS OF RESEARCH

WASHABLE AND REPLACEMENT AIR FILTERS • GREASE FILTERS
EVAPORATIVE COOLER MATERIALS

AMERICAN ARTISAN

RESIDENTIAL
AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

Member—Audit Bureau of Circulations
Member—Associated Business Publications

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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Founded 1864

DECEMBER 1951

Volume 88, No. 12

Syncromatic LEADER... IN ENGINEERED WARM AIR HEATING EQUIPMENT ANNOUNCES AN IMPORTANT ADDITION TO ITS LINE OF STEEL WARM AIR FURNACES

"GF" LO-BOY GAS-FIRED SERIES
4 Sizes
75, 95, 120 and 145,000 B.T.U.

"GFU" HI-BOY GAS-FIRED SERIES
2 Sizes
75 and 95,000 B.T.U.

PRE-ASSEMBLED
The "GF" and "GFU" Series Gas-fired furnaces leave the factory *completely assembled and wired.*

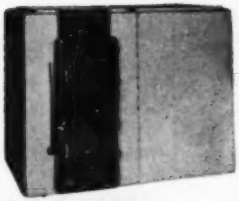
COMPACT Only 20" wide!!

HEAT EXCHANGER
Heavy 12 gauge of matchless design. Removable baffles make all internal parts of the Heat Exchanger accessible for cleaning.

BUILT-IN DRAFT DIVERTER

SYNCROMATIC'S SILENT-RUNNER FLAME BURNER is the ultimate in gas combustion. Produces quiet operation with all gases and has particularly smooth lighting and shut-down characteristics.

DESIGNED BEAUTY
The Jacket is truly a masterpiece in cabinet design. The owner will not only be delighted with its operation, but also proud of its durable beauty.



C.F.B. HAND FIRED
Coal Gravity or Forced Air
90,000 to 250,000 B.T.U.

700 DE LUXE SERIES
110,000 and 146,000 B.T.U.

HI-CAP
OIL—GAS—COAL • 10 SIZES
330,000 to 1,000,000 B.T.U.

MANUFACTURED BY

Syncromatic Corporation
WATERTOWN, WISCONSIN

1931 20th YEAR 1951

the editor's notebook

Next Month's Annual Directory

Just in case you have overlooked our DIRECTORY SECTION in the past or you are among our many new subscribers, watch for next month's issue and make it a point to thumb through the yellow pages. There you will find manufacturers listed for about every need that arises in warm air heating and sheet metal contracting. Air conditioners, blowers, controls, furnaces, humidifiers, instruments, dust collectors, sheet metal working machinery, ventilators, registers and grilles, sheet metal — all listed for handy reference throughout the year. Manufacturers who advertise in the issue are identified in case you want to refer to their advertisements for more information.

Keep it at your elbow on your desk. You like thousands of others will make a habit of referring to it throughout the year. At least we hope you will because that's what they tell us about it and that's why we prepare it.

In March — OHI Exposition Preview

In March we will preview the 29th Anniversary Oil Heat Exposition which will be held in Commercial Museum, April 14-18.

Oil Heat Institute says it will be two shows rolled up into one because it covers the period from April 1952 to April 1954. No show is planned for 1953, since exhibitors and dealers have asked for one big show every other year.

Meetings will be open to everyone connected or affiliated with the oil heating industry, from refiners to fuel oil dealers, from manufacturers to dealers, and from government personnel to professional people.

A minimum public attendance of 25,000 is expected during show hours.

Sentry
AT-A-GLANCE
REMOTE and DIRECT READING
TANK GAUGES

FOR BASEMENT TANKS: Type D-O for 2" openings, Type D-10 for 1½" openings.

For accurate, easy reading of tanks — indoors, outside or underground.

FOR UNDERGROUND TANKS: Type D-U, shown at right, for 2" openings only.

Left: Standard type At-A-Glance Gauge for direct reading at storage tank. Also available with special fitting for use and adaptation with remote gauge indicators to permit dual readings — both at tank and outside.

Dependable, Inexpensive, Weatherproof... Simple Mechanical GAUGES, Easy to Install

Accurately indicates liquid level in remote storage tanks at all times — Not affected by specific gravity oil changes or variations. Simplified mechanical operation eliminates unnecessary fittings, bulbs or levers for oil men to tamper with — no need for access to building. Can be installed for dual location readings — indoors and out. Non-corrosive stainless steel and brass extension lines connect tank float with cast aluminum, weatherproof, thermometer type indicator — calibrated in fractions. Easy to read, unconditionally guaranteed. Write for folder showing complete line.

KRUEGER Sentry GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

Scrap Round-Up

Defense Mobilizer Charles E. Wilson said "Steel is king, and scrap is the crown prince. This is simply a question of the security of America." Defense Production Administrator Manly Fleischmann declared "This is no longer a shortage, it is an emergency! Scrap collections may be the key to mobilization and possibly will spell the difference between victory and defeat."

The high officials were not overstating the case in regard to scrap and the need for maximum collections. Steel cannot be made without scrap and steel is the backbone of mobilization.

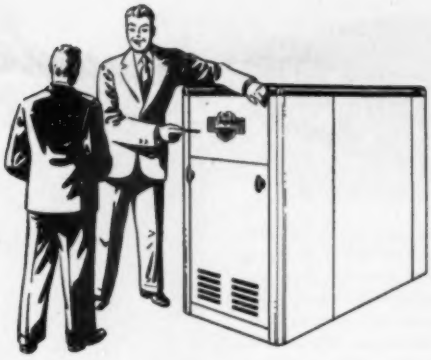
Every shop in our industry can do its part in the scrap drive by two simple actions. First is a thorough search of the shop or plant for any actual scrap items. Along with this there should be a survey of equipment to determine whether there are any machines around that have outlived their usefulness.

The second step is the establishment of a fixed routine for the handling of any scrap produced by shop operations. If it is a policy of the shop to dispose of scrap as rapidly as possible, the material will not pile up in a dark corner when it should be on its way back to the blast furnace.

Future Steel Supply

After steel requirements for direct military use and atomic energy have been supplied in 1951 and 1952, as much finished steel is likely to be available for other uses this year

The right line for your customers...



... is the right line for you

It pays, both financially and in personal satisfaction, to be able to offer each of your prospects exactly the right heating system for his requirements. Waterbury Dealers can do just that, because the complete Waterbury line of quality furnaces and winter air conditioners provides a unit for every size home and every type of fuel. Thus a Waterbury Dealer can be sure of customer satisfaction and additional customer-referred prospects. In addition, Waterbury national advertising means easier sales through consumer acceptance... and the clearly-stated Waterbury Policy means exclusive distribution rights plus a friendly dealer-distributor-factory relationship. It's true indeed, that the right line for your customers is the right line for you.

FURNACES AND AIR CONDITIONERS

Waterbury

GAS CONVERSION BURNERS

The Waterman-Waterbury Co.

OVER 44 YEARS OF WARM AIR HEATING

1122 Jackson Street N.E. **Minneapolis 13, Minnesota**

the editor's notebook

and next year as this country consumed in the record year 1950, the American Iron and Steel Institute has stated. That is indicated by comparing current Washington forecasts of military needs with current and prospective statistics of steel production and shipments.

The direct military and atomic energy requirements, excluding all-out war are expected to rise to the equivalent of an annual maximum of 12 million tons of steel by the middle of 1952, according to Washington forecasts. That amount will approximate the expected increase in finished steel shipments next year as compared to 1950 when 72.2 million tons were provided for the civilian economy. Shipments are likely to exceed 80 million tons this year and are scheduled to rise next year.

If these production forecasts prove to be accurate it is possible that some defense supporting consumers who received allotments for fourth quarter 1951 will be able to continue their production pace.

Under the controlled materials plan the fourth quarter allotment for buttons was 718 tons; mops and dusters, 1,379 tons; brooms and brushes, 1,135 tons; drapery hardware, 3,625 tons; venetian blinds, 35,500 tons.

Other allotments: squeegees, 18 tons; carpet sweepers, 691 tons; fireplace equipment, 1,740 tons; sporting equipment, 16,997 tons; baby carriages, 5,100 tons; games, toys, dolls, 35,400 tons; musical equipment, 1,602 tons; picture frames, 600 tons.

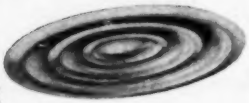
Fairless Says:

The "Calamity Johns" of this country have never quite

as modern as television

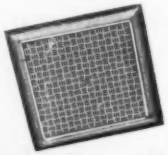
venturi-flo®

CEILING OUTLETS



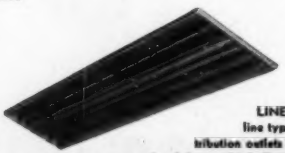
Studio shown features Barber-Colman Venturi-Flo Ceiling Outlets which are further described in bulletin F-4085-1.

How to introduce large volumes of air into a television studio at very low noise levels — THAT was the problem! Plus the requirement of flexibility made necessary by television scenery and props. The answer was supplied by Barber-Colman Company Uni-Flo air distribution outlets. Studio installations in many television stations have proved that Uni-Flo ceiling outlets are engineered to meet the needs of studio and control room, as well as the more conventional applications. The Barber-Colman field engineer in or near your city is ready to suggest the correct Uni-Flo installations for your commercial, industrial, or institutional jobs.



ADJUSTABLE SQUARE CEILING OUTLET. Ask for bulletin F-4728.

Write today for bulletin F-4712 on TV Studio Air Distribution.



LINE-O-FLO line type air distribution outlets are illustrated and discussed in bulletin F-2741.

BARBER-COLMAN COMPANY
1226 ROCK ST., ROCKFORD, ILLINOIS

the editor's notebook

succeeded in foisting upon the American people the greatest hoax of all — the idea that big business grows only by crushing small business, Benjamin F. Fairless, president of the United States Steel corporation, said at the dedication of the Duncansville Sheet Metal plant of National Radiator Co.

"All of us recognize the importance of new and small business to our national economy," he said. "When any nation stops producing new business units it must perish just as surely as it would if it stopped producing children."

Federal Assistance for Knotty Problems

Do you have any knotty problems that keep you awake nights? If so, you can probably get the government to do a research job on them. In fact, it may even give you a grant so you can do the research yourself.

For example, it was announced recently that the Federal Security Agency was giving a professor at Northwestern University a $12,000 grant to study the "Unconscious Factors Governing Courtship and Mate Selection." Another 46,000 tax dollars are going to a Harvard professor for a study of "Effects of Modern Child Training on Personality and Emotions."

The Department of Agriculture, through its Family Farm Program, is getting a gleam in its eye at the prospect of studying the "satisfactions" of farm life and the need for personal counsel and guidance of farm families in their domestic problems.

Meanwhile, the Interior Department is still researching to find out how long a raccoon

LOOK around you!

...you'll see the most successful shops in your vicinity using

LOCKFORMERS

Lockformers have become "standard equipment" in practically every sheet metal shop in the world that does duct work. Here's why: (1), Lockformers make Pittsburghs and other seams 15 to 20 times as fast as hand methods. (2), They make *better* seams. (3), First cost is low and maintenance is negligible. (4), Lockformers have proven to be just about wear-out-proof!

More than 22,000 Lockformers and over 14 years of service in the field have earned Lockformer's unequaled reputation. Any user will tell you that his Lockformer saves more money—earns more "extra" profits—than any other piece of equipment in his shop. Send for your free copy of the Lockformer catalog today!

ONE MAN WITH A LOCKFORMER MAKES MORE PITTSBURGH LOCKS THAN SIXTEEN MEN WITH EIGHT BRAKES.

Mail Coupon!

THE LOCKFORMER CO.
4615 West Roosevelt Road, Chicago 50, Illinois

Gentlemen:
Please send LOCKFORMER Catalog and prices.

Name.....

Address.....

City.....Zone.....State.....

THE LOCKFORMER CO.

4615 WEST ROOSEVELT ROAD • CHICAGO 50, ILLINOIS

lives, and it still has its desert game bird specialist, Dr. Gardiner Bump, over in the Middle East looking for the oriental sand grouse.

Perhaps what is most needed now is a study of the effects of ever-increasing federal spending on the emotional stability and domestic tranquility of John Q. Taxpayer.

Globe Trotting Author

Washington, D. C.—Lawrence E. Gichner, president of Gichner, Inc., roofing, sheet metal and ventilating firm at 1900 Kendall St., N.E., is in Europe making a study of roofs.

"I learned a lot recently climbing about the cathedrals of France, Switzerland, Belgium, Holland and England. Now I'm going back to find out some more and to share our techniques with the folks over there," Gichner said on his departure. . .

The Gichner firm, founded by his father, Ernest Gichner, more than 60 years ago, has worked on such buildings as the Lincoln Memorial, the Senate Office Building and the British Embassy, and at present is working on the American Red Cross Building and Hecht's Arlington store.—*The Washington Post.*

Sales Manual How-To-Do-It

Although everyone in the profession recognizes the value of a sales manual as a selling-tool, too many dealers are doing without this aid because of inexperience in assembling a manual.

The November issue of *News and Views*, published by Viking Air Conditioning Corp., Cleveland, Ohio contains a detailed description of how to make your own sales manual, tailored to your own business with material you may now have on hand.

If you have already made up your own manual, it may be profitable to check it against the requirements set forth in the how-to-do-it article.

This outline of manual-making is complete even to a description of the type of binders found to be most effective. The story shows the reader step-by-step and section-by-section how to assemble the sales material and present it effectively.

If you are not already on Viking's mailing list, write to George Gould, editor, *News and Views*, Viking Air Conditioning Corp., 5601 Walworth Avenue, Cleveland 2, Ohio.

Full Pay for Idle Men

The United Automobile Workers union, stating that its members are "prepared to make whatever sacrifices are necessary" in the mobilization program, has asked the government to insure 40 hours' pay for anyone laid off temporarily because of industrial conversion.

UAW President Walter Reuther sent telegrams to President Truman, Defense Mobilizer Charles E. Wilson and Defense Production Administrator Manly Fleischmann asking that the administration seek this power from Congress.

Reuther wants federal funds used to supplement state unemployment funds. He claimed that "hundreds of thousands of American families" are without adequate income for "months" between the end of the civilian production jobs and the beginning of defense work.

"Unemployment resulting in

WALKER
DRAFT REGULATORS
by using
ALUMINIZED STEEL
in their construction
Chosen by Engineering Tests for our Domestic line of Draft Regulators because of its superior heat and corrosion-resistant qualities.
WALKER offers 2 types of Draft Regulators with Tee Joints featuring the new friction-free Box Hinge.
348 Economy Tee Joint
COMMERCIAL and INDUSTRIAL
(Ball Bearing) Built to meet toughest conditions. Size 16" to 36".
Millions of heaters require Draft Regulator replacements. You can take advantage of this enormous market or improve the performance of installations you make by using Walker Regulators. Pipe sizes 3" to 36".
5 Good Reasons why you should make WALKER FUEL SAVERS standard equipment.
1 — They are tops in adjustment and sensitivity.
2 — They save on every type of fuel.
3 — Easily installed and neat in appearance.
4 — The new Box Hinge insures long life and positive action.
5 — Because of enormous volume, Walker prices are especially attractive.
WRITE FOR PRICES
WALKER MFG. & SALES CORP.
1725 Penn St.
St. Joseph, Missouri
WALKER
DRAFT REGULATORS
THE WORLD'S LARGEST DRAFT CONTROLS FACTORY

YOU CAN'T HELP MAKING MONEY

If you sell one of these famous space heaters

ALLEN'S
BARNES
BENNER-NAWMAN
BEYER
COLE HOT BLAST
COLEMAN
COLEMAN *(Canada)*
CREST *(Canada)*
CREST-AIRE *(Canada)*
CUSTOM AIRE
DOMESTIC
DRACO FIREBALL
DUO-THERM
ENTERPRISE
ENTERPRISE *(Canada)*
ESTATE HEATROLA
EVANS
EVEN-TEMP
FAWCETT TORRID-OIL *(Canada)*
FESS *(Canada)*
FINDLAY *(Canada)*
FLOOR-O-LATOR
FLORENCE
GILLEN
H. C. LITTLE
HERCO HEAT FLO *(Canada)*
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MONARCH *(Canada)*
MONOGRAM
NESCO
NORGE HEAT
ORAN
PERFECTION
PREWAY
QUAKER
QUAKER *(Canada)*
SAFEWAY
SCOTSMAN
SIEGLER
SILENT FLAME
SUPERFLAME
THERMO-PRODUCTS
TORRIDAIRE
VIKIMATIC
WASHINGTON FRUGAL

PLUS ALL THE LUXURY OF AUTOMATIC HEAT — WITH LOW-COST, EASY TO SELL A-P COMFORT CONTROLS

Yes, if you sell one of the famous-make space or trailer heaters listed here you can offer every customer the luxury of true automatic, thermostatically controlled heat! This means easier selling, because you can offer comfort and convenience equal to the most expensive kind of heating, with no wasted heat — and substantial fuel savings!

What's more, this easy-to-sell comfort means ADDITIONAL PROFITS for you. Write now for Bulletin T-2 on A-P Comfort Controls.

EASY TO INSTALL

There's an A-P Electric or Mechanical Comfort Control actually engineered to fit these heaters. Just mount conversion top on present manual control; connect to thermostat and transformer. Mechanical thermostat even eliminates wiring!

DEPENDABLE Controls Famous for completely reliable service . . . in oil heating . . . gas heating . . . refrigeration.

A-P CONTROLS CORPORATION

(formerly Automatic Products Company)

2452 N. Thirty-second Street • Milwaukee 45, Wisconsin • In Canada: A-P Controls Corporation, Ltd., • Cookville, Ontario

the shift from civilian to defense production is a normal part of the cost of our mobilization effort," Reuther said.

Then he again said that UAW members "are proud of their contribution to the strength of America during the last war (and) are prepared to make a comparable contribution in the present emergency."

Pigs and Progress Movie

A movie entitled Pigs and Progress showing aluminum production in full color has been revised to bring it up to date with the rapidly advancing uses for aluminum and is available for bookings by Reynolds Metal Co. Readers who have movie projection equipment may wish to show this picture at business luncheons.

The picture presents in simple language a complete nontechnical story of aluminum. Beginning with the mining of bauxite in the company's own mines, the scenes shift to the large alumina mill at Hurrican Creek, Arkansas, where the bauxite is converted into alumina, a pure white granular material resembling sugar.

The alumina is then shown being electrically reduced at the huge Jones Mills, Arkansas, to metallic aluminum. Also shown are the mill operations involved in converting aluminum ingot to such forms as sheet, plate, foil, wire, rod, bar, electric cable, aluminum powders and pastes, rolled and extruded shapes.

This movie requires 26 minutes for showing. It was written by G. W. Birdsall, directed and produced by L. J. Shafitz, head of Reynolds own motion picture department. The commentator is John Martin.

BOTTOMS UP!

Sun FUEL MASTER

COUNTERFLOW
HI-BOY
OIL-FIRED
FURNACE

Three Sizes
80,000, 95,000,
112,000 Btu.

It's bottoms up with the SUN Counterflow HI-BOY Furnace for in this model the blower-filter unit is mounted at the top of the furnace to drive the heated air downward through an opening in the floor and thence through tunnels, ducts or chases installed beneath the floor. But except for the position of the blower-filter unit, the Counterflow Hi-Boy and the Standard model are identical in size, construction and capacities.

Yes, it's bottoms up with the Counterflow and health to all when homes are equipped with SUN Fuel Master Furnaces.

Complete catalog is awaiting your request. Ask for it today.

J. V. Patten Company
SYCAMORE, ILLINOIS, U.S.A.

A specially written musical score played by a full symphony orchestra furnishes appropriate background music.

Prints on 16 mm film with sound track are available for loan without charge. To obtain bookings, write Motion Picture Department, Reynolds Metal Co., 2500 South Third St., Louisville 1, Ky.

Watch the Insurance

A considerable percentage of residential, commercial, and industrial properties does not have sufficient insurance because of increases in values and replacement costs. A survey of 427 claims by one fire insurance company for fire losses in dwellings during two months in a Midwest state showed that 25 per cent of the residences had insurance to cover only about one half of their value.

The survey, reported by NBFU, showed that the average value of the 427 dwellings evaluated last summer was $6,988, but the average insurance carried per dwelling was $4,238, or 60 per cent of the current value.

NBFU reports that almost all analyses of this kind reveal substantially the same facts.

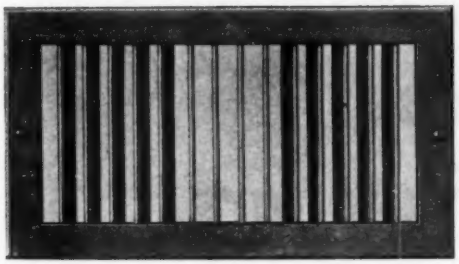
Canvassing Opposition

A flood of anti-house to house selling ordinances has been introduced in city councils since the Supreme Court upheld the Alexandria, Louisiana, ordinance on June 4, forbidding salesmen to sell house to house without invitation from the house-holder. Information available indicates that most of these laws have failed to pass. About 500 communities are reported to have such laws. The restrictions affect many direct selling companies.

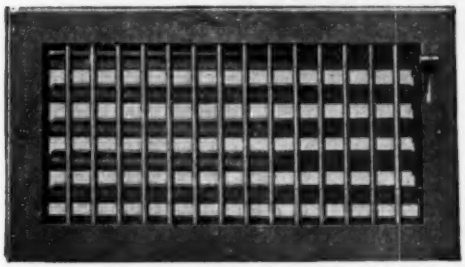
Your Best Buy in Top Quality Multiple Diffusion

Registers and Grilles for HIGH VELOCITY OUTLETS

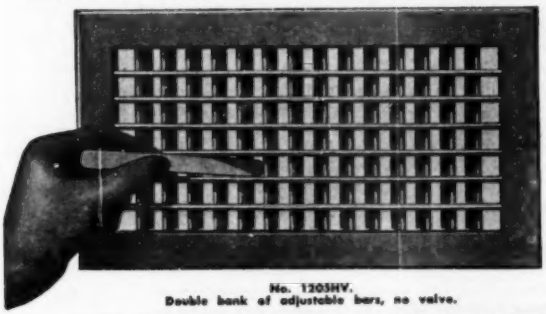
The AUER "Streamliners"



No. 1005V.
Single bank of adjustable bars, no valve.



No. 1005V-HML.
Single bank of adjustable bars, with multi-louvre valve.



No. 1205HV.
Double bank of adjustable bars, no valve.

In these registers and grilles, the bars are carefully formed, smooth in contour. Bars are pivoted in frame on special split sleeves, or "expansion" inserts, furnishing proper tension to hold bar firmly in position (and maintain silence when register is in operation at high velocity) yet adjustable to any desired angle. Bars have "tear-drop" shape in cross-section, somewhat like an airplane wing, and being pivoted at the exact center, may be completely reversed. This permits you to turn the *thin* edge outward, if you wish (and the *broader* edge toward airflow) cutting resistance and turbulence to the minimum. Bars may be set in any grouping, and repeated adjustments will not affect their rigidity when set. Shutters of multi-louvre control valves are pivoted on rivets to prevent vibration. All Streamliner registers equipped with gaskets.

8 MODELS. The Series includes models with single bank of adjustable bars (vertical or horizontal), also with double bank of adjustable bars (vertical in front and horizontal in back, or the reverse), also all above four types with the addition of horizontal multi-louvre valves in the rear, controlled by lever on face of register.

Ask for Bulletin S-50. For forced air or gravity registers, we will send you Auer Register Book—for perforated grilles, Catalog "G".

THE AUER REGISTER CO., 6600 CLEMENT AVENUE, CLEVELAND 5, OHIO
Canadian Distributor, Marchand Furnace, Ltd., Tilbury, Ont.

Auer REGISTERS
& GRILLES for AIR CONDITIONING & GRAVITY

YOUR PROCUREMENT JOB

IS SIMPLIFIED BECAUSE—

All these P-K Fasteners are Standard

With fasteners in limited supply, you have a better chance of improved delivery when you order *standard* types and sizes than when you order specials.

For this reason, the *complete* line of Parker-Kalon Self-tapping Screws and other fastening devices is a definite advantage. In changing to a standard fastener, moreover, you are not restricted to one or two types only remotely suited to your fabrication requirements. For out of the full P-K* line you are almost certain to find one or more types which can be adapted to your needs.

Here's an example. When TYPE A is not immediately available, TYPE Z will be found to be an excellent substitute for light gauge sheet metal and can also be used in heavy sheet metal.

P-K Assembly Engineers are ready to help you in every way possible to adjust your contract work to limited supplies, and apply the long experience of Parker-Kalon to your most difficult problems of planning and procurement. Parker-Kalon Corporation, 200 Varick St., New York 14, N. Y. Sold through Accredited Distributors.

TYPE A — the original Sheet Metal Screw, for light gauge sheet metal. **TYPE Z** — a thread-forming screw for light and heavy gauge sheet metal, non-ferrous castings, plastics, etc. Also made with **HEX HEAD**, suitable in heavier sizes for structural steel. Hardened **SCREWNAIL** — drives like a nail . . . holds like a screw, for secure fastenings of sheet metal to wood. Hardened **MASONRY NAIL** — for fastenings to brick, concrete and other masonry; simpler to use, costs less than comparable devices.

*TRADE MARKS REG. U.S. PAT. OFF.

IF IT'S P-K IT'S O.K.

The Original

PARKER-KALON* SELF-TAPPING SCREWS

A TYPE AND SIZE FOR EVERY METAL AND PLASTIC ASSEMBLY

WEIR-MEYER *helps build*

YOUR REPUTATION!

Whose name sells the furnace, yours or the manufacturer's? We're not kidding ourselves — it's your good name and reputation that stands as an unwritten "guarantee" of satisfaction to the customer. And that's true regardless of what brand of furnace you sell!

Weir-Meyer merchandising helps build your reputation with the customer through the Furnace Service Campaign, national magazine advertising, effective letters and direct mail pieces, newspaper advertising, store display material and other sales aids. Before he ever needs a furnace, the customer is thinking about you!

the customer has full confidence in you. You can offer him any unit from the complete Weir-Meyer line of 114 furnaces and burners . . . your Weir-Meyer presentation tells him which Weir-Meyer equipment is best for him to buy . . . your Weir-Meyer representative can help you plan his installation, compute heat loss and completely engineer the job.

. . . . . the handsome Weir-Meyer unit is everything you said it would be! Delivery is on time, for Weir-Meyer makes prompt delivery anywhere in the U.S. — and keeps the delivery promises made to you.

. . . . . your reputation grows among the customer's friends — for Weir-Meyer quality and performance is worth talking about. And that satisfied Weir-Meyer customer is your best advertising — the most effective means of spreading the sales-winning reputation that Weir-Meyer helps you build!

The WEIR-MEYER Dealer is a *"Preferred Person"*

SEND THIS COUPON NOW!

for latest facts on the Weir-Meyer line and information on how you can become a "preferred person"—the owner of a profitable protected Weir-Meyer dealership!

THE MEYER FURNACE CO.
DEPT. L-12, Peoria 1, Ill.

Please rush latest facts on Weir-Meyer line of heating equipment and information on becoming a Weir-Meyer dealer . . . at no cost or obligation to me.

Name. . . . . .

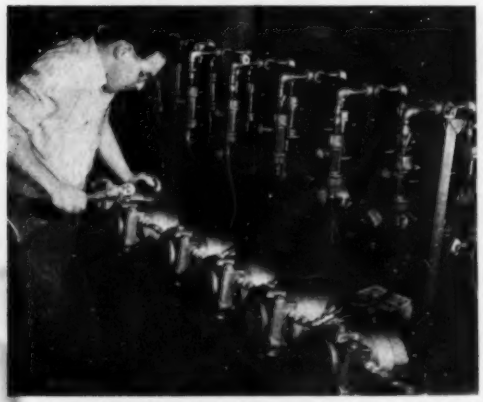
Street. . . . . .

City. . . . . State. . . . . .

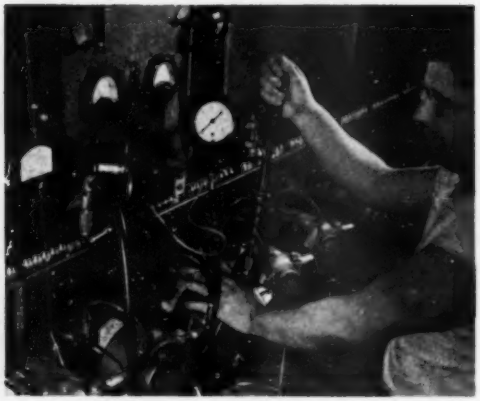
THE MEYER FURNACE COMPANY • General Offices: Peoria, Illinois
Manufacturers of Weir & Meyer Furnaces • Air Conditioners for Gas—Oil—Coal • Factories: Peoria and Peru, Illinois

For customer satisfaction, sell Delco-Heat

Delco-Heat's rigid testing and inspection guarantee products of highest quality and dependability.



Setting a number of *Rotopower* Units up for an actual 8 hour run-in test. Here, the oil pump operation must meet its most rigid test. All moving parts of the Delco-Heat "Rotopower" Burner are located in this compact *Rotopower* Unit.



Adjusting pressure regulating valve of *Rotopower* Unit to assure proper pressure of oil at nozzle, and checking operation of motors under low-voltage conditions. A component part of every *Rotopower* Unit is the exclusive Delco Appliance Rigidframe Motor.

Today, more than ever, the home owner demands the finest in automatic heat. Nothing less than a unit that gives completely economical and trouble-free service will satisfy him.

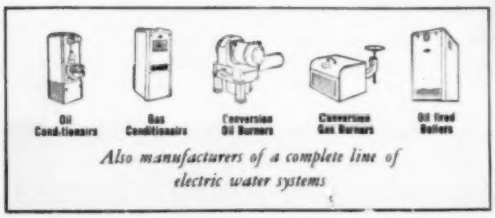
When you sell Delco-Heat, you can be sure you're giving your customer the best. A big reason for this is that the high production standards maintained by Delco insure the finest quality products available anywhere. At the lowest possible prices, too—because Delco's constant checking and testing have maintained quality without sacrificing the economy of mass production techniques.

Of course, there are other reasons why you'll find Delco an outstanding company to work with. For example, Delco Appliance manufactures all of the parts that go into the Rotopower Oil Burner—which means a better integrated unit, with each individual part designed for its specific function.

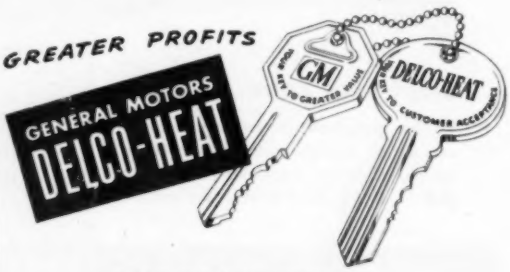
It's important, also, to remember that as a Delco-Heat Retail Distributor, you'll be a part of the great "General Motors family." It's assurance that you will always be backed by the best engineering, the newest improvements, the most aggressive types of sales assistance, and the fairest of business policies.

All of these factors put Delco-Heat Retail Distributors at the top of their field, with the most profitable line in the home heating business. If you would like more information about a Delco-Heat franchise, write to Dept. AA-32, Delco Appliance Division, General Motors Corp., Rochester 1, N. Y.

YOUR KEYS TO GREATER PROFITS



Also manufacturers of a complete line of electric water systems

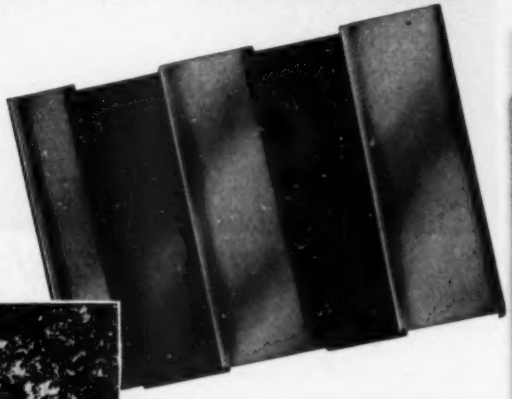


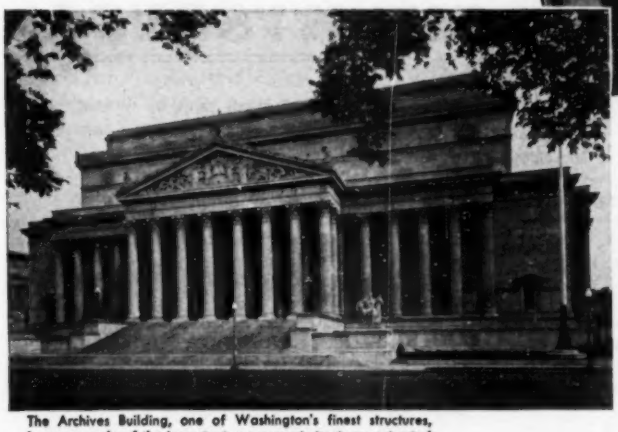
DELCO APPLIANCE DIVISION
General Motors Corporation • Rochester 1, New York

STRUCTURES Built for Posterity . . . . Demand—

HUSSEY
MAJESTIC
3-Way Thru Wall
COPPER FLASHING

The Westinghouse Memorial Bridge in Pittsburgh is protected for all time from seepage and resulting erosion, with Majestic Flashing.





The Archives Building, one of Washington's finest structures, is an example of the important, permanent structures entrusted to Majestic 3-Way Thru Wall Flashing for seepage protection.

Because of its exclusive three-way bond, Majestic Copper Flashing effectively resists stresses and strains in *every* direction . . . provides *permanent* protection against seepage, leakage and erosion. Its patented keyed surfaces, combined with the cutback design, form an everlasting grip on the mortar.

Made from solid 16 oz. corrosion-proof Hussey Copper, Majestic Flashing is interlocking, and easily fabricated for fast installation.

7 Convenient Warehouses to Serve You Promptly!

PITTSBURGH
2850 Second Avenue

CLEVELAND
5318 St. Clair Avenue

CHICAGO
3900 N. Elston Avenue

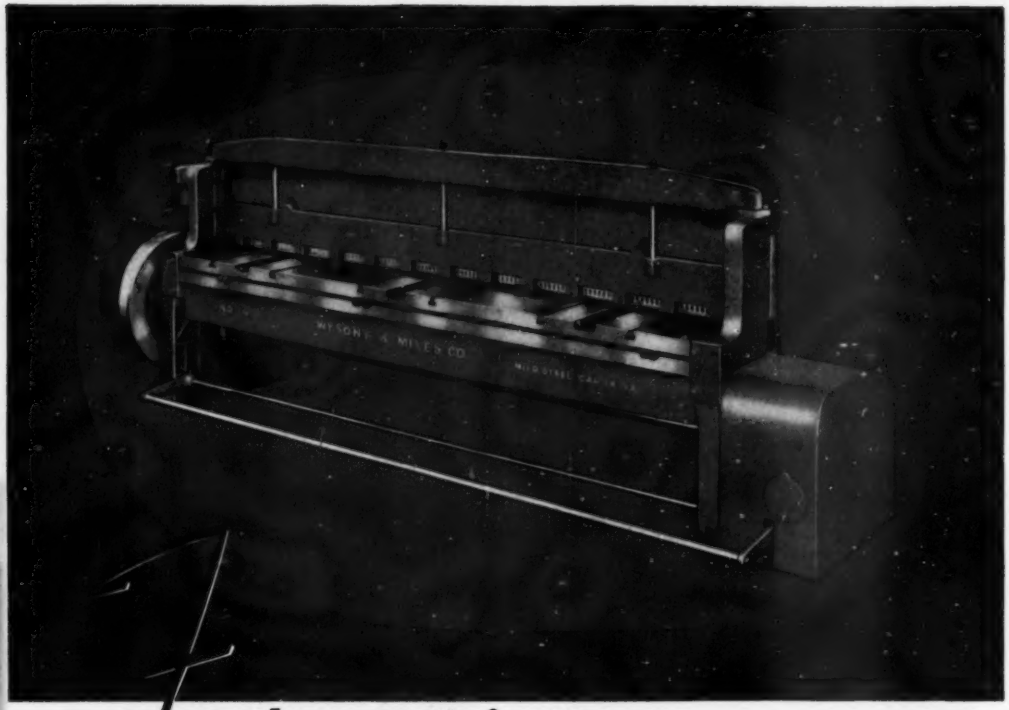
NEW YORK
140 Sixth Avenue

ST. LOUIS
1620 Delmar Boulevard

PHILADELPHIA
1632 Fairmount Avenue

CINCINNATI
424 Commercial Square

HUSSEY **C. G. HUSSEY & CO.**
(Division of Copper Range Co.)
Rolling Mills and General Offices: Pittsburgh 19, Pa.
Hussey Warehouses carry stocks of Copper and Brass Products for Prompt Shipment



For shear satisfaction...

BUY WYSONG!

This friendly tip by satisfied users throughout the country has helped to boost sales of Wysong shears by approximately 250% in the past year. Check the following features which have contributed to this user satisfaction and the steadily growing popularity of Wysong Shears.

- √ Constructed from Hi-tensile castings produced under laboratory control.
- √ Holddown, automatic, spring-actuated. Individual holddown feet have compensating action on larger models.
- √ Postive, quick-acting clutches.
- √ Non-repeat unit built into all clutches.
- √ Motors: Sufficient power for continuous capacity operation.
- √ Controls: Magnetic starter and push button control.
- √ Ball-bearing, precision back gauge adjustable to .0078 (1/128th) of an inch.
- √ Adjustable, Stainless Steel scale embedded in table.
- √ Front, side and bevel gauges.
- √ Clearly visible cutting line.
- √ For safety, finger guard of heavy gauge slotted metal mounted on holddown.
- √ Each shear tested for 24 hours before leaving factory. Shipped completely equipped and ready for capacity operation.

Wysong builds a complete line of Squaring Shears with cutting lengths up to 12 feet, and rated capacities up to 3/16 inch mild steel. See your dealer or write to the factory for full information.

Illustrated: No. 1410. Cap. 10 ft., 14 ga., mild steel; 18 ga. stainless steel.

WYSONG and MILES Co
GREENSBORO, NORTH CAROLINA

News Round-Up

August Heating Equipment Shipments Up

SHIPMENTS OF WARM AIR FURNACES during the month of August were considerably up over July, although still below shipments in August 1950. Manufacturers shipped 77,192 warm air furnaces in August 1951, compared to 55,045 in July 1951 and 145,512 in August 1950. Total shipments for the first eight months of 1951 reached 533,114 as against 628,852 in the same period of 1950, according to the Bureau of the Census.

Analysis of August shipments as to type of fuel gives the following breakdown: coal fired units, 16,782 or 22 per cent; oil fired units, 30,630 or 40 per cent; and gas fired units, 29,780 or 38 per cent.

Automatic heating accounted for 78 per cent of shipments and 72 per cent of the furnaces were forced air design.

There were 63,578 oil burners of all types shipped in August 1951 compared to 44,503 in July 1951 and 138,587 in August 1950. Total shipments for the first eight months were 421,965 units compared to 553,457 in the same period of 1950.

Of the August 1951 total, 60,309 burners were residential.

Aluminum Production Rises

IN SPITE OF A SIX PER CENT drop in U. S. primary aluminum production in September, due to power shortages in the northwest, the third quarter output topped the second quarter total by more than six per cent, Donald M. White, secretary of the Aluminum Association, has announced.

September's production of 138,857,530 pounds, which was almost 9,000,000 pounds under the 147,630,992 pounds turned out in August, brought the output for the third quarter to 431,883,793 pounds and for the first three quarters of the year to 1,239,065,517 pounds. These figures represent increases of 16.1 and 17.4 per cent, respectively, over the corresponding totals for 1950. "Despite expanded production," Mr. White said, "supply for civilian use remains as tight as before because of increased government requirements."

Aluminum sheet and plate shipped in September by the association's sheet division members totaled 77,670,405 pounds, 15.5 per cent under the 91,888,728 pounds shipped in August, Mr. White reported. Third quarter shipments of these items aggregated 263,330,211 pounds — 3.3 per cent under the second quarter figure — bringing the total for the first three quarters of the year to 842,423,199 pounds.

Winter Fuel Supplies For Steel Mills

AS A RESULT OF arrangements worked out by oil companies in cooperation with the Petroleum Administration for Defense, supplies of fuel oil for the nation's steel mills should be sufficient to prevent any interruption of steel production because of oil shortages next winter, Secretary of the Interior Oscar L. Chapman has said.

"Over-all the fuel-oil situation for steel mills will be tight," Secretary Chapman said. "But we expect they will be able to get through the winter without curtailing operations, barring some unforeseen contingency."

Secretary Chapman added, however, that natural gas shortages may make it necessary to curtail some types of steel-making operations which cannot be converted to other types of fuel.

Gas Appliance Outlook

AGGRESSIVE MERCHANDISING and production-line ingenuity, without resort to war emergency models, will enable the gas appliance industry to meet public demand for home-heating equipment, gas ranges, and water heaters in the first half of 1952, Harold Massey, assistant managing director of the Gas Appliance Manufacturers Association has predicted.

Mr. Massey told a meeting of the Mid-Southeastern Gas Association that the increased rate of industrial production of all types, a sharp rise in installment buying, and a "break at last in the public's buying apathy" have contributed to a bullish outlook for the gas appliance market, despite materials limitations, corporate and excise taxes and price controls which will prevent the industry from matching its record volume of last year.

Production of home-heating equipment will keep pace with essential home construction and modernization, with sales efforts directed particularly toward parts of the country which are not affected by government-imposed gas restrictions. Lines of this equipment will be simplified without decrease in efficiency.

Home Builders Show

MATERIAL SCARCITIES, alternate materials, financing restrictions, cost and pricing problems are among the key subjects slated for major attention at the National Association of Home Builders Convention & Exposition in Chicago, January 20-24.

Convention chairman Joseph Haver-tick of Dayton says that particular stress will be made on assembling and presenting the facts on these and other knotty problems in a manner most usable by the individual builder.

News Round-Up

As an example, he revealed that tentative plans call for actual demonstrations of the use of alternate materials and methods of material conservation.

Association leaders point out that, under present conditions, success in home building depends increasingly upon keeping fully informed about all matters affecting the industry. Comprehensive coverage of both the business and technical problems of builders will be provided in the scores of clinics, panel discussions, general sessions and special convention features. Keynote speakers have not yet been announced, but over 100 experts from industry and government have been invited to participate in the program, Mr. Haverstick reports.

In the exposition, builders will see the largest display of building materials and equipment on record. Here, too, materials conservation and the use of alternate materials will be stressed, according to convention-exposition director Paul S. Van Auken.

In addition to the Casino Room of the Congress Hotel and the main exhibition Hall and mezzanine of the Stevens Hotel, large areas on the third floor of the Stevens have been reserved for exhibitors.

October Housing Starts Decline

HOMEBUILDERS STARTED 86,000 new permanent nonfarm dwelling units in October, a decline of 5,000 units, or 5 per cent, from September, according to preliminary estimates of the Bureau of Labor Statistics. Early reports indicate that the October downturn was widespread, but most pronounced in the southern and pacific states.

During the first 10 months of 1951, a total of 942,500 new dwelling units were begun, 22 per cent less than the record 1,215,100 started during the same period last year. Included in the January-October 1951 total are 20,400 new dwelling units in projects started by private builders for personnel at military and naval installations, under provisions of the National Housing Act of 1949. Almost 32,500 new units have been started under this program since it got under way in November 1949.

Final reports for July boosted the total for that month to 90,500 units, a gain of 4,500 over the preliminary estimate.

Aluminum Supply

TWO IMPORTANT EVENTS have taken place that indicate a steady improvement in the supply of aluminum.

Aluminum Company of America has signed an agreement with the General Services Administration of the U. S. Government. This contract provides that the government will have first call for five years on the aluminum output of the new smelting plant being built by Alcoa at Rockdale, Texas. When month-to-month government requirements take less than two-thirds of the metal, the remaining aluminum up to the two-thirds total will be available to other users in the form of pig or ingot. The other portion of output will be made into semi-fabricated and fabricated products for commercial sale.

Kaiser Aluminum and Chemical Corp. has announced plans to double its aluminum reduction plant and power facilities now under construction in the New Orleans area. The GSA signed a contract with Kaiser guaranteeing to purchase production of the 100,000 ton a year plant that is not marketed commercially. This agreement runs for five years.

Wholesaler's Bulletins

THE NATIONAL HEATING Wholesalers Association has been continuing a policy of issuing bulletins to the membership on topics of importance to their business. Executive secretary Wyman of the association has maintained close contacts with Washington bureaus to keep in touch with latest developments in control and regulations affecting heating wholesalers.

ASHVE Officers

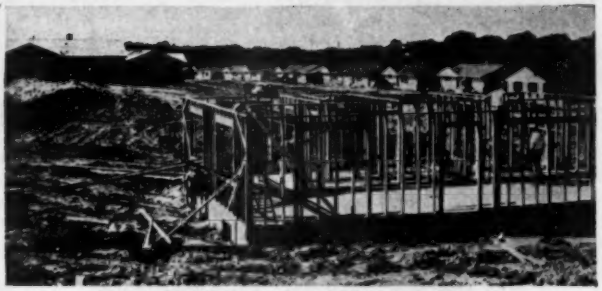
THE NOMINATION OF ERNEST SZEKELY, president of the Bayley Blower Co., Milwaukee, Wis., for president of the American Society of Heating and Ventilating Engineers in 1952, was announced at the society's headquarters, 51 Madison Ave., New York.

Ernest Szekely

Nominees for other offices submitted by the ASHVE nominating committee are: First vice president, Reg F. Taylor, consulting engineer of Houston, Tex.; second vice president, L. N. Hunter, vice president of research, National Radiator Co., Johnstown, Pa.; treasurer, J. Donald Kroeker, consulting engineer, Portland, Ore.

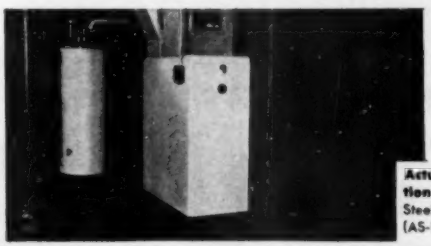
Voting will be by proxy ballot of the membership which totals over 8,000. Although only one name is presented for each office by the nominating committee, members may write in the names of other candidates. Results of the vote will be announced at the society's 58th annual meeting in St. Louis, in January, 1952, at which the new president will take office. The ASHVE is headed now by Lauren E. Seeley, dean of the College of Technology and director of the Engineering Experiment Station, University of New Hampshire, Durham, N. H.

ALL 115 UNITS of this Amvets Project heated with RICHMOND Model AS-12-G



Rockford, Illinois Amvets Project — Architect: Charles Boettcher
Heating Contractor: Alga Reece Sheet Metal Co.
Heating Wholesaler: Place Brothers—**General Contractor:** Peter Larson

One of 115 housing units sponsored by the Amvets World War II Association



Actual basement installation of Richmond Gas-Fired Steel Winter Air Conditioner (AS-12-G)

There were sound reasons for using the Richmond AS-12-G steel winter air conditioner for all the homes in this project. Quality construction—heavy-gauge steel heat exchanger for longer life . . . de luxe white enamel jacket (easy to keep clean) that looks good in finished basements and playrooms . . . dependable performance—AGA approved . . . factory-assembled horizontal unit—that means it's fast and easy to install.

The Richmond AS-12-G fitted perfectly into the needs of these 115 homes (expected to expand to 250). Here, as in so many of the country's other high class developments, Richmond is a logical choice. Whatever your heating requirements, you can count on Richmond's wide selection of units to do an outstanding job.

RICHMOND PLUMBING & HEATING

RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.

AA-12

Richmond Radiator Company
19 East 47th Street, New York 17, New York
Please send me information on Richmond gas-fired winter air-conditioner:
☐ We are Plumbing Wholesalers
☐ Plumbing Contractors ☐ Building Contractors
NAME.....
COMPANY.....
ADDRESS.....
CITY.....ZONE.....STATE.....

ONLY No. 175A

Magic Dial ADJUSTMENT

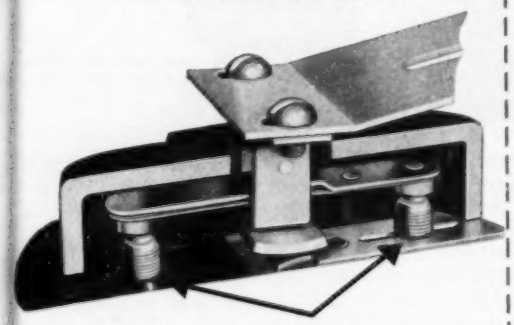
Assures comfort at the selected temperature setting with a simple dial adjustment.

ADJUSTABLE HEATER

Set heater to match any primary control . . . on the job. No assortment of heaters to bother with.

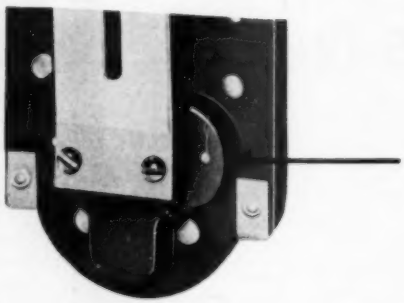
Guaranteed by Good Housekeeping

TWIN CONTACTS



Positive contact at all times . . . immune to vibration. Self-cleaning. No flexible lead wires.

ENCLOSED CONTACTS



Covers protect contacts from dust and lint. Cuts down on number of call-backs on service calls.

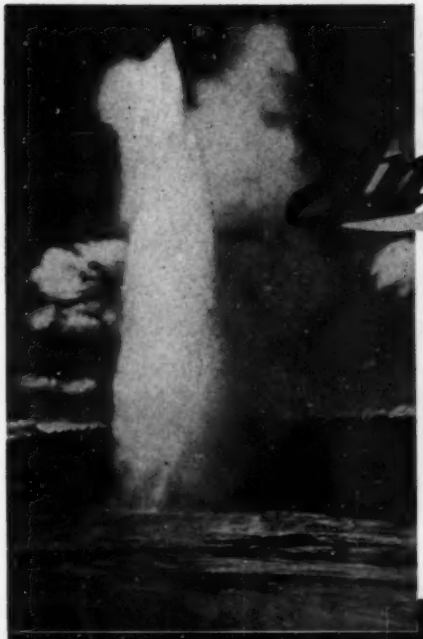
- AUTOMATIC HEATING CONTROLS
- INDUSTRIAL ENGINE RADIATORS
- COLOR PROCESS PRINTING

PERFEX

CONTROLS YOU CAN TRUST

PERFEX CORPORATION, MILWAUKEE, WISCONSIN

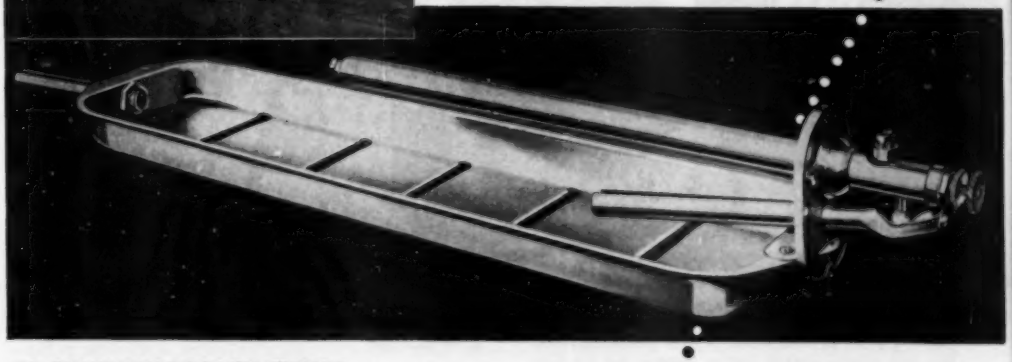
In Canada, Perfex Controls Ltd., Guelph, Toronto 1



Instant Steam

FROM A SIZZLING HOT PAN ...THE MOST EFFICIENT, MOST DEPENDABLE WAY TO PUT

MOISTURE IN THE AIR . . . .



NO STAGNANT POOL TO REHEAT

Only a *thin film of water forms in pan.* Pan heats extremely fast. Water vapor is formed quickly—efficiently.

SUPER-SENSITIVE THERMOSTAT

Fool-proof. Gives *immediate response to temperature change.* Starts and stops flow of water according to bonnet temperature. Leaves only thin film of water in bottom of pan, when furnace heat goes down.

OUTSIDE SCREW ADJUSTER

Easily reached. Permits *fingertip control of water flow.* Lock nut assures hairline regulation.

EASY INSTALLATION

Pan rests directly on combustion dome for most efficient operation. Can be suspended in plenum chamber, if necessary.

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All accessories contained in one compact unit. Easily assembled—economical to use—quick to sell. With 12 pan sizes for any type warm air furnace.

THERMO-DRIP *Automatic* HUMIDIFIERS

With the AUTOMATIC HUMIDIFIER water drips into pan only after pan is hot. Each drop sizzles into steam as it strikes heated pan surface.

This puts the MOST MOISTURE into air stream when it is MOST NEEDED. That's why Thermo-Drip gives *faster — more efficient vaporization.* Write TODAY for FREE literature. Dept. A-121

AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

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BUY Luxaire® FURNACES

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As a gas-fired unit 100,000 to 250,000 B.T.U. Input
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● Why complicate your buying — your selling — your stock inventories — your perplexing fuel situations? You can eliminate all 4 complications when you buy Luxaire!!

Yes — you can be independent of these troublesome problems with Luxaire, because Luxaire Furnaces and Air Conditioning Units are so ingeniously designed, engineered and constructed that they are approved to burn either GAS or OIL!

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Luxaire HEATING & AIR CONDITIONING UNITS

Arnold Kruckman's

Washington Letter

Scrap and CMP

At the National Press Club here in Washington there is a rack where those who are anxious to tell what they think, leave those modern sources of irritation — to reporters — which are called releases. You undoubtedly know that a release is an instrument of words in which those who wish to propagandize relieve themselves of some message, or some matter of information, which they think the world should have or for which the world is eagerly waiting. It would interest you to see the loads of paper uselessly spread on this rack at the National Press Club. You would never suspect there is a shortage of paper. (We know there is not a shortage of words.)

The Future

One of the national magazines devoted to steel left a reprint of a current editorial in which it expended a yard of newsprint and a yard of typed-text to let us know that the short-range prospect for steel is very bleak, less promising than ever; but that it is possible the long-range prospect may mean that there will be enough in 1952, or 1953, or 1954, to take care of both the needs of defense agencies and civilian manufacturers. It is very much like the weather prediction of the old-fashioned almanac which told us that it might be dry next week if it didn't rain. These steel predictions are about as useful as the old almanac, too.

Not so long ago the NPA held a conference on metals, designed to supply information to industrial periodicals which they might relay to their readers. It lasted almost four hours. There was much conversation which came principally from Manly Fleischmann, Defense Production and National Production Administrator; Wallace B. Quail, director of NPA iron and steel division; Frank H. Hayes, director, NPA copper division; Timothy A. Lynch, acting director aluminum and magnesium division; Ervin Vogelsang, director, tin, lead and zinc division; Harry B. Sharpe, acting director, miscellaneous metals and minerals division; and Robert H. Winn, assistant general counsel in charge of enforcement and compliance, NPA.

Scrap Problem

Mr. Quail started with the ball. We learned these United States are facing some very serious factors in the winter months about scrap. He said the scrap equation, the scrap problem, cannot be overemphasized as far as seriousness is concerned. Ore, we were told, has been a major problem for many years. Only now, with the prospective development of Labrador, South America, and the refinement of taconite, that there is a real prospect of ore supply coming into better balance. It was emphasized that power, copper, and aluminum are the real problems connected with the difficulties of those who use metal.

It was interesting to learn how NPA operates. They have what is called a production directive committee. Day by day the NPA calls into Washington representatives of every mill in the country. These mill people bring along their production schedules, which are intimately and colloquially known as production boards. These schedules are analyzed to determine what the output will be in each particular category. When the figures have been shaken down so that the pattern is clear the mill people are told by NPA how much tonnage they shall make each month of the quarter.

Sheet Output

The historical pattern during the five year, pre-Korean period, in sheet and strip, had an output, roughly, one-third of the entire output of the industry. Now that output is curtailed and the output of plate, shapes, and bars is increased. New shape mills are to come into existence, but it will take several years to bring them into being. It was explained you cannot roll shapes in a sheet mill or straight mill. But you can convert sheet mills over to plate. So they have put a substantial plate load on the sheet and strip mills. Of course, the further they go in that direction the greater will be the expense of output of sheet and strip. All this job is done with a staff consisting of NPA steel and iron director, deputy director, four assistant directors, and a series of production sections. There is a chief in charge of sheet and strip, another in charge of bars, and others in charge of plates, and so forth, with staffs to handle analyses and problems pertaining to the many products and their uses.

Washington Letter

Director Hayes emphasized that the copper supply is not susceptible of rapid increase. He predicted there would be less copper in 1952 than in 1951, and less in 1953 than in 1952. The hope of more copper in the Western Hemisphere appears to be in developments expected in Chile, Peru, Cuba, Mexico, and Canada. Bear in mind it takes at least five years to make a copper mine productive. The copper division of NPA has branches devoted to raw materials, brass mills, wire mills, foundry and ingot makers, and a program branch. The heads of the operating branches are people brought in from industry. This is true generally throughout NPA. Every senior head is virtually chosen by the industry itself. In order to avoid unnecessary conflicts within an industry, each man in the highest brackets is told he is expected to remain in NPA six months. Continuity is obtained by keeping those of less eminence in the division more or less permanently as deputy directors. All directors serve without pay; and some of the deputies receive their salaries from the firms who have loaned them to the government.

When it came Manly Fleischmann's turn, he made the interesting explanation that the Defense Production Administration has the job of distributing materials among broad programs, while the National Production Authority has the job of translating such basic allotments into allocations for individual firms in industries falling under its jurisdiction. He suggested if he were a manufacturer making a long judgment he would be planning to shift into aluminum because that situation is going to improve while, in his opinion, the copper situation has no permanent cure. Fleischmann thinks the peak in demand for materials will come in the second quarter of 1952, and will extend into the third quarter, holding level probably until the end of the first quarter of 1953; after that probably will come a gradual decline. However, he made it clear an extra expansion in the aircraft program, or an expansion in the guided missile program, or something else not yet even known, would change the whole picture.

No Freeze

All responsible officials of NPA and DPA and other agencies make clear that their jobs are made vastly more difficult because, unless you have an absolute, outright shooting war, the military do not like to take a decided stand on anything; they will not freeze models. They do not like to put anything into production because technological advances are unfolding at a Buck Rogers pace. In electronics, what is novel today is old hat next week. No procurement officer will take the responsibility of saying; "This is it." Obviously this spells piling up of partial production in metals, semi-finished articles that eat up metals but are neither fish, flesh nor good red herring.

The military never reports anything as delivered until it has every last gadget on it and is ready to be flown away in combat. If a small thing like a rear-view mirror or a kit is missing it is not a completed item, and it does not get into the delivery schedule. With thousands and thousands of items going into completed production you often have tanks and planes literally that could be used and all ready to go, but lacking one single, insignificant bottleneck item. Under conditions of actual war the lack would be ignored.

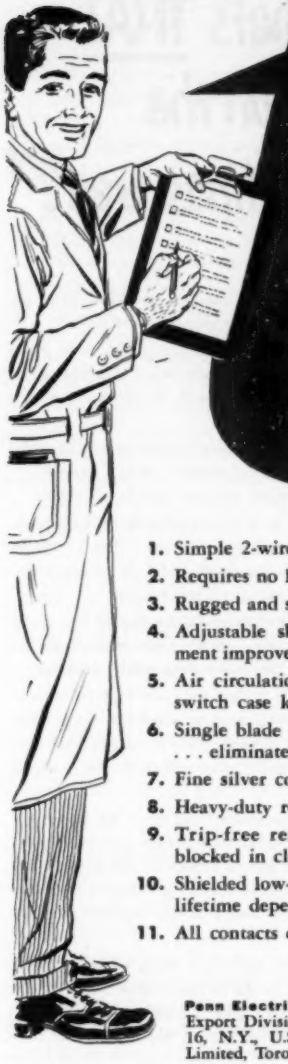
Waiting For Prices

It was brought out that those who have it are often reluctant to part with any kind of scrap because they hope OPS will raise the price to encourage the flow of scrap. Lead, it was reported, has dimished more than 50 per cent in annual supply volume. It was explained that the compliance officers in NPA — DPA are chiefly teachers, persuaders, to show the industry how it can live with the rules and regulations of the controlled economy. In chasing after black market supplies the compliance people found that most of them were like the little man who wasn't there; those who advertised them chiefly hoped to be able to secure them if any one offered an extravagant price. Others used the offer as a bait to lure customers to buy regular items on a legitimate basis.

Another conference brought out those who are in charge of construction problems in NPA-DPA. It developed applications for steel, copper and aluminum over all was 120 per cent of the materials available for the supply of all demands, in all categories for manufacture in the entire national economy. Total structural steel authorized for construction in the first quarter of 1952 is 900,000 tons, out of a total supply of 1,425,000 tons. Construction in the first three months of 1952 is estimated, at 1951 prices, at the rate

(*To page* 29)

COMPARISON TESTS PROVE...



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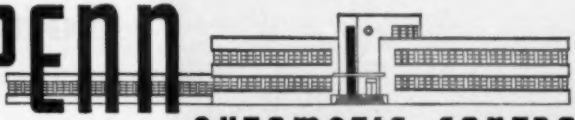


AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

"What's THAT on the Christmas tree?"

My wife had every reason to question my sanity. Looked like I had suddenly gone loco!

But *I* had a point. Or thought so. Sure, it was partly a gag, but here it was Christmas, and I was pretty happy . . . with myself *and* with the world!

Why? Well, the true happiness of Christmas comes from being grateful. And I *know* why I am. First, for my wife and family, of course.

But I'm also mighty glad to be in the heating business. I don't know of any other I'd rather be in. I love the work and I can see tremendous opportunities all around me.

As a result of these opportunities, I've had a pretty good year . . . made some extra money . . . and think I can make even more next year.

The people I deal with are wonderful, too. Not only my customers – but the boys from the suppliers, as well. They're all good fellows, and always ready to cooperate when I have a problem.

I like the products I sell, too. My trademark is quality. In controls I always specify Honeywell, for they have a reputation for quality that adds to mine. And they've got such a complete line I can use their controls for any job that comes up.

Now do you see why I hung a Chronotherm on the tree? To me it symbolizes many of the things that have made me happy. And I know that in their own special way Honeywell controls have helped to make this one of the finest Christmases ever!

MINNEAPOLIS **Honeywell**

First in Controls

Kruckman —

of $29,000,000,000 per annum. In detail it is interesting to learn that schools, in the first three months of 1952, are permitted to have for construction 96,000 tons of carbon steel. Elementary and secondary schools were allocated 61,000 tons structural steel; 600 libraries, museums, and higher educational projects were awarded 28,000 tons. New starts were given 21,000 tons. In terms of 1950 prices the elementary and secondary school program totals about $1,200,000,000.

It was brought out there are approximately 10,000 tax amortization cases awaiting processing, and that they cannot be completed much before next Spring. They involve roughly about $25 billion which includes construction and equipment of the buildings. It also came out that no new starts in commercial building will be permitted in the first three months of 1952.

John L. Haynes, widely known in the construction industry as the arbiter in building materials during World War II, and now director of the building materials division of NPA, gave it as his opinion that producers of equipment made of steel in buildings would find their supplies hoisted about 20 per cent; but that copper would be moderately down, while aluminum would be off by something in the neighborhood of 20 per cent. He urges that the hero of the building equipment business will be "the fellow who invents a way to make plumbing — and similar supplies — out of aluminum, of which it is anticipated in 1952 we will have an ample supply." He suggested that those who wish to be able to readily obtain information about finished building material items and equipment should secure from NPA a product assignment book called the B Products List, which runs over 50 pages, is public information, and should be on the desk, or in the office, of every industrialist who has business with any phase of construction.

Metal For Homes

It was brought out that the Housing and Home Financing Agency has been given a very substantial allotment of metals which it can dole out to those who build residential structures. Under the regulations a house which is to have copper piping may have a greater allowance of copper and less steel, or a greater allowance of steel and less copper if the preference is for steel piping. The statement was reiterated that over 800,000 residences will be permitted to be built in 1952. It was stressed there is as yet very little real curtailment in the nature of the materials that may be used in building dwellings, but it was suggested that severe cuts will be logical, such as have been made in the materials for production of typewriters and automobiles. Brass goods, for instance, have been severely cut back but not in their use in building homes.

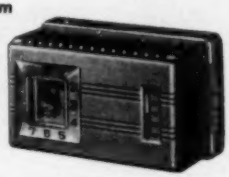
Total allotments announced by the NPA construction controls division in November for the fourth quarter of 1952 aggregated $423,996,115. Commercial structures total 599 valued at $67,763,914; 124 warehouses were

Let the big modernization market help fill your stocking in '52!

Promote Up-to-Date Honeywell Controls Like These During the Coming Year

Honeywell's famous Chronotherm, plus the new Electronic Moduflow package, give you a terrific one-two punch for going after a modernization market that will be *even bigger* in '52!

Honeywell Chronotherm



The Honeywell Chronotherm is the most sensitive, most accurate thermostat ever built! It *automatically* lowers temperature at night, raises it in the morning, so your customers get up in a nice warm house. And it saves fuel, too. These features offer you a mighty important "modernization" opportunity . . . because a recent survey showed 3 out of 4 people with thermostats raise and lower the settings every day—*by hand.* These people are your Chronotherm market!

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This outdoor and indoor thermostat system gives your customers the finest comfort, even in the most changeable weather. It compensates for temperature changes outdoors, load shifts indoors, and structural heat loss. It's up to 100 times more sensitive than conventional systems . . . and it's ideal for complete modernization jobs!

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Surest Way to check

Air velocities!

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Here's the way to take the guesswork out of the job of balancing systems and to speed up the adjustment of any air conditioning, heating, and/or ventilating set-up. It's the Alnor Velometer Jr., the miniature, direct-reading air-velocity meter—a handy low-cost instrument for instantaneous and precise measurement of air velocities in unrestricted areas. Only 4 inches high, 3 inches wide, 1½ inches deep, Velometer Jr. is precisely built for accurate performance—with double pivoted, double jeweled movement, air-actuated pointer vane, and sturdy, handsome, molded bakelite case. Available with single or double velocity range scales, Velometer Jr. can be one of your most useful tools for years to come.

Now is the time! *Order your Velometer Jr. today while you are thinking about it. And send for Bulletin which gives complete details. Use the handy coupon!*

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permitted having a value of $25,997,938; 75 theaters, and other entertainment and recreation buildings, were given the green light, valued at $10,373,017; office buildings to the number of 270, costing $195,995,167, were passed, as were 87 miscellaneous residential structures, having a value of $26,195,568, and 174 churches, religious edifices and welfare structures valued at $29,423,772. Public works, 86 in number, had a total value of $68,246,739.

It is interesting to note that NPA gave permits for more theaters, and similar buildings, and for more office buildings, as well as residential buildings, than for any other types. The greatest cuts were made in public works and in religious and community structures. A total of 40,000 tons of steel, 15 per cent of the amount requested, 258,794 pounds of copper, a little over 3 per cent of the amount requested, and no aluminum was allocated. It was pointed out that the denial of a project in the fourth quarter is not final. The applicant may consider it merely a deferral and may file again in the next quarter. The denied material will be allocated if the situation has eased.

Construction Permitted

It appears the NPA really believes there is particular need for radio stations, television stations, theaters and a number of various social and recreational structures. It also was partial to banks, office and loft buildings and medical and dental clinics, as well as to hotels, inns and motels. It does not seem to be particularly convinced that there is great need for more libraries, museums, private special schools, lodge buildings, clubs and some religious buildings, under present circumstances. And it is not at all convinced that we need more jails and reformatories, wharves, subways, police stations and miscellaneous municipal facilities, all of which came under classification as public works. Most of these were denied materials. On the other hand, the greatest amount of structural and carbon steel was allocated to the public works group, which received almost half of the steel assigned to the entire list of applicants.

Next in importance, according to the awards, were commercial buildings and office buildings, which received, together, a total of about the same volume as the public works group. The smallest quantity of carbon and structural steel, 829 tons, was received by the builders of theaters and other entertainment and amusement structures. Obviously those who need the least steel have the greatest chance of getting permits for the greatest number of units.

House trailers were awarded 8,892 tons of carbon steel, 1,400,000 pounds of aluminum, for construction during the first quarter of 1952. It is anticipated this will enable industry to produce approximately 16,000 trailers. The interior of the trailers are to be changed from aluminum to steel sheets, likewise the exterior. The trailer people were told that the extent to which they can con-

(Please turn to page 122)

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and a New Year that's

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the PINT SIZE PACKAGE that does a FULL SIZE JOB!"

Says Jack Green, Energetic Viking Representative

"Dealers in the Springfield, Mass., area like the fact that Viking's new, small 7" blower delivers up to 700 cubic ft. of air per minute and converts warm-air furnaces of up to 50,000 btu rating to winter-air conditioning. They tell me that this means a huge new source of business where regular size blower packages are too big and too high priced."

"My Springfield dealers are Always on the Alert for New Sources of Business and Added Profits," says

ROY J. TREPANIER,
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"They are always looking for new and better products in the heating field. Their enthusiastic support, such as their response to Viking's new '777' Blower Package, isn't easily won. For their choice of products to handle, they bank on their long experience in Springfield's tough heating market . . . and so do I! That's why we are pushing Viking's latest addition to their complete blower line."

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ABBOTT W. LAWRENCE, JR.,
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"In my area, there have been a great number of 4 and 5 room "price" houses built since World War II. Viking's new, compact, low priced blower package has made these small home owners winter-air-conditioning prospects for me."

D. W. ROGERS,
Rogers Home Appliances,
1080 State St., Springfield, Mass.
"I like the simple direct drive on the new '777' that eliminates all belts and pulleys. I also like the fact that just the turn of the rheostat knob 'dials' a selection of seven speeds to meet any requirements."

FRED WIEDERSHEIM,
25 Tracy St., Springfield, Mass.
"One of the '777' features that I like best is the great number of consumer appeals: compact, good-looking cabinet; full size (400 square inch) filter; easy speed adjustment; Viking quality materials throughout; and the low price that makes winter-air-conditioning available to every homeowner. With features like these, selling is lots easier."

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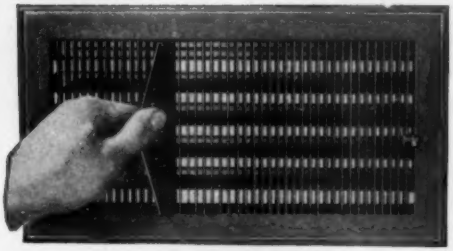
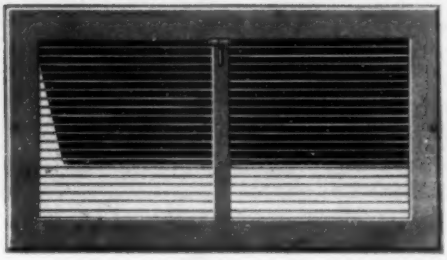


No. 256 4-WAY FLOW U. S. AIR-CONDITIONING REGISTER

Recommend this register for those Top-grade Jobs where Four-way Directional Flow and multiple valve control are indicated. U.S. No. 256 can be installed in any location — sidewall or ceiling — with any style stackhead. It helps build your reputation for efficient heating and careful workmanship.

No. 153 SINGLE VALVE REGISTER



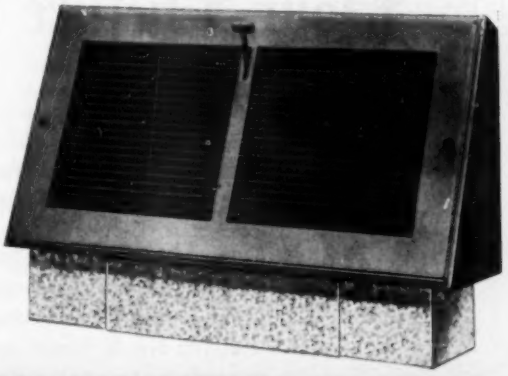
On the jobs that call for a "sharp" pencil plus Quality Appearance, this trim, neat U.S. No. 153 makes an ideal installation. It's the best constructed single valve register in the industry.

165 3-¾" U.S. "Out-Of-Wall" Air-Conditioning Register

(Developed for Perimeter Heating)

This is the Perfect Solution for adding a blower unit to old house heating systems without cutting into floors, walls, girders, or carpets. Stackhead sets against wall when studding space is not available. Can be supplied with or without heads. We advise ordering complete with heads. Matching cold air returns are U.S. No. 175 3-¾" Out-Of-Wall intakes.

Also a Grand Substitute for floor Registers on Slab-floor Perimeter Systems.



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The right to think of Christmas as we choose is only one of many blessings that, as Americans, we all share. And as we extend our warmest wishes for a happy Christmas to you and yours, we again join with you in thankfulness for the good will and freedom that abounds in this wonderful land of ours.

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New Ceiling Price Regulation For Industry

A NEW PRICING REGULATION has been issued for the construction industry that includes the warm air heating and sheet metal contractor in its scope. This Ceiling Price Regulation 93 makes it possible for contractors to include current costs of labor and materials in their estimates for contracts.

Previously contractors had been blanketed under the General Ceiling Price Regulation and CPR 34, the regulation covering the service trades.

While CPR 93 allows the inclusion of current costs in estimates for fabrication and installation, it requires that the profit markup in use during the base period be reduced by 10 per cent. The base period is the year prior to the outbreak of war in Korea. OPS officials explained this reduction in profit percentage by pointing out that costs of construction labor and building materials have risen by 10 and 12 per cent since the start of the war. It is estimated then, that nine-tenths of the pre-Korean profit percentage will yield the same dollars and cents profit when applied to higher costs.

Ceiling Price Regulation 93

Base Period

July 1, 1949 through June 24, 1950.

How to find ceiling prices for lump-sum contracts.

(1) Determine highest base period percentage markups for overhead and profit.

(2) Separate this percentage markup into profit and overhead expenses. (Example, if base period markup was 50 per cent, 40 per cent may have been overhead and 10 per cent profit.)

(3) Diminish *profit* markup by 10 per cent.

(4) Add overhead markup to diminished profit markup.

(5) Multiply total estimated *current* cost by revised markup.

(6) Add this amount to estimated total current costs. The result is your ceiling price.

Method for time and materials contracts.

(1) Find highest base period hourly charge for labor.

(2) Find base period hourly cost of labor including payroll costs.

(3) Find *current* hourly cost of labor including payroll costs.

(4) If current labor costs exceed base period labor cost, the difference may be added to hourly charges.

(5) Materials are charged at current costs plus a percentage markup with diminished profit margin as outlined under lump-sum contracts.

Ceiling Price Regulation 34

Base Period

December 19, 1950 to January 25, 1951.

How to find ceiling price for lump-sum contract.

(1) Determine highest percentage markup for overhead and profit charged during the base period.

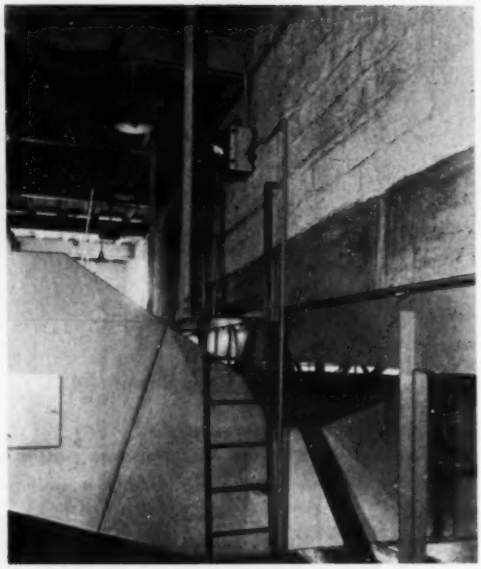
(2) Find base period hourly labor costs.

(3) Find material costs for a similar job during the base period.

(4) Add labor and materials costs and multiply by percentage markup to establish ceiling price.

Carbon Monoxide Alarm Starts Ventilating System To Protect Garage Workers

Every precaution for safeguarding the health of workmen is used in the New York transit system bus garages. With a fresh, safe atmosphere in which to work the men can do more in a day's time.



Mounted on the wall above return air duct is a carbon monoxide alarm that continuously samples air returned from individual zones. CO concentration starts ventilating system and sounds buzzer on master control panel.

PROTECTION of workmen against carbon monoxide fumes in four new bus garages of New York City's transit system is achieved through the use of two types of ventilation control arrangements, both equally as effective and both relying upon the same kind of CO detecting and alarm instruments.

The garages, housing diesel and gasoline engine buses, are located in Flushing, Staten Island, Ulmer Park, and Flatbush. All are approximately the same size, each containing some 140,000 sq ft of floor area with storage facilities for 200 to 250 buses.

The Silent Danger

Since carbon monoxide gives no warning, it can strike before its victim is aware anything is wrong. Even when concentrations are so low that no physiological effects are distinguishable, carbon monoxide causes mental apathy and physical loginess resulting in worker inefficiency and susceptibility to accidents. The hazards of carbon monoxide can be overcome by continuous ventilation but usually this is an expensive method, especially in the winter when heating costs have to be considered. Therefore, a reliable ventilation control system has proved to be the most economical and efficient way of safeguarding garage workmen against this hazard.

At the Flatbush and Ulmer Park garages, the heating and ventilating systems are integral. Supply and exhaust fans and steam heating coils are installed in two sheet metal equipment houses in the roof trusses of the garages with ductwork transporting fresh, and recirculated air. Since both these garages are essentially the same design, a description of one will suffice.

Zoning Set-up

The garage area is divided into five zones, each served by an independent heating-ventilating system. One zone is the fuel dispensing area, cut off from the rest of the building by fire walls and automatic fire doors. This area is supplied with 100 per cent fresh air continuously.

The other four zones are arranged to receive 10 to 15 per cent fresh makeup air at all times. Through a program clock control, the systems automatically change from partial recirculation to 100 per cent fresh air once

In this section of the Flatbush garage, air supply and return ducts are overhead. Diffusers are used for discharge.

Air discharge openings in three of the five zones are at floor level. Louver blades are set to create high air turbulence.

Master ventilating control and indicating panel which is under 24 hour observation. Lights on the panel indicate functioning of dampers, fans, and CO alarms in four zones.

every hour for about 10 minutes. In addition, during peak traffic hours, these systems again operate on 100 per cent fresh air.

How They Work

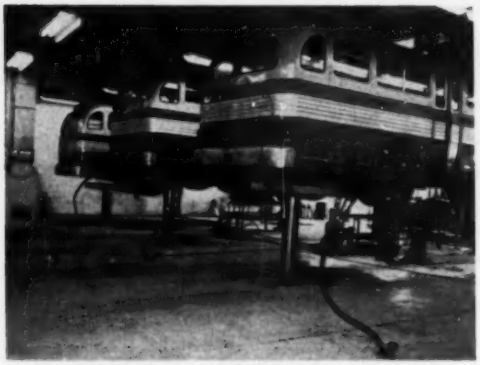
Superseding all other controls are sensitive carbon monoxide alarms, developed by the Mine Safety Appliances Co., Pittsburgh. These instruments continuously sample and test the atmosphere in return air ducts. If the concentration of carbon monoxide exceeds 2 parts in 10,000 (.02 per cent), the system automatically switches to ventilating position. Using no more electrical current than a 100 watt light bulb, these MSA alarms provide full protection against carbon monoxide without the expense of constant ventilation. Therefore, at these two garages, four air changes per hour are provided automatically, with the standby assurance that the alarms will start the ventilating cycle if any excessive concentrations of carbon monoxide are present.

As a further safeguard, a manual pushbutton control for the fresh air supply is installed in Zone 1, the area where buses are repaired. If the men in this area feel they need additional fresh air, they merely push a button to get it. Exhaust fumes from the buses are removed from the area through flexible metal hose connections to tail pipes. Discharge of this exhaust is into an underground duct system.

Air Supply

Supply air, fresh or recirculated, is transported from the fan houses through ducts led down the building columns. Discharge outlets of these ducts are about 1 ft. above the floor. Louver blades in the outlets are set to swirl the air as it leaves, creating high turbulence.

Supply fan motors in four zones are two-speed units arranged for operation at 1,800 rpm, full capacity, or at 1,200 rpm low speed. The exhaust fan motors are single speed, 1,800 rpm units. In normal operation, the



Service hoists in the Flatbush garage. Tailpipe connections for fume removal can be seen in the picture.

supply fans run at 2/3 speed, the exhaust fan is off, the main exhaust damper is closed, the recirculating air damper is open and the fresh air damper is closed. The exhaust and recirculation dampers are components of a two-position, multi-louvered mixing damper. When the MSA CO alarms, the program timer, or the manual switch call for air changes, the supply fan goes on full speed, the exhaust fan operates at full speed, the exhaust damper opens, the recirculation damper closes and the fresh air intake damper opens. The detecting instruments are located in the fan booths.

Sample Taken

Air samples are drawn into the instruments by small blowers connected to 1/80 hp motors. The sample is forced through a cell containing thermocouples and a catalyst, active hopcalite. Catalytic reaction of this chemical converts carbon monoxide to carbon dioxide. This reaction liberates heat which is measured by the thermocouples and indicated on a contacting meter. When the needle of the meter reaches a predetermined setting (.02 per cent), a magnet pulls it to a stop post, closing the alarm circuit. The magnet holds it against the post continuing the circuit until a solenoid reset switch is operated automatically after the CO content of the sampled atmosphere is reduced to a safe concentration. Closing the contacting meter circuit energizes a secondary relay to the ventilation control system.

A master control and indicating panel for the entire ventilating system is located in the tool room of the bus garage which is under 24-hour observation. The panel has the following lights for each of the four zones: One lamp showing when the program timing device calls for full ventilating speed; two lamps indicating whether the CO alarms are calling for full speed or low speed, two lamps showing whether the supply fan is operating at low or high speed, and two lamps indicating whether the damper is in recirculating or ventilating position. There also is a manual control switch for each zone on this panel. A buzzer in the panel is arranged to sound for 20 seconds when the program timer or the CO alarm changes the supply fan motors from low to high speed. On the panel is an emergency stop switch for the entire system. Emergency stop switches also are located near each end of the garage for use in case of fire.

In one sense, the CO alarms also are fire warnings since any fire produces concentrations of carbon monoxide. Theoretically, therefore, if a fire occurred and heat was delayed in reaching the fusible sprinkler heads, carbon monoxide in the atmosphere would be detected quickly and the buzzer on the master control panel would sound.

At the Flushing and Staten Island garages, the heating and ventilating systems are independent of each other. Truss-mounted unit heaters take care of the heating while individual roof fans handle the ventilating requirements. The roof fans are controlled automatically by the same type of carbon monoxide alarms that are used in the other garages. In all, there are 27 alarms strategically located in each garage. Each alarm samples the atmosphere within a radius of 40 ft.

No Power Waste

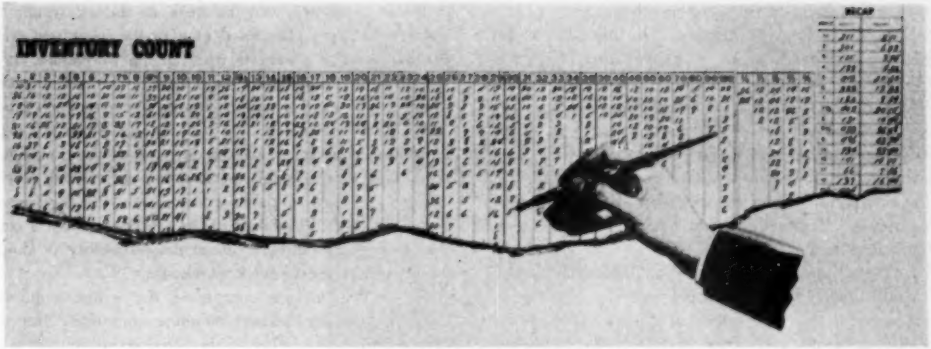
Each exhaust fan operates only when the CO alarm indicates that the concentration in the vicinity has reached .02 per cent, or two parts in 10,000 parts of air. Therefore, unless there is a need for ventilation, power is not wasted running the fans continuously. When the CO concentration has been vented to the outside, the fan goes off. Each fan is powered by a 3 hp motor. Fresh air enters the building through the 10 frequently opened 30 ft wide doors.

In all areas, except the inspection area which is occupied almost constantly, the CO alarm boxes are mounted on the walls 12 ft above the floor. In the inspection area, they are 4 ft above the floor. Manual line starter switches for each fan are located in convenient places throughout the garage.

Exhaust duct intakes are located at floor level to suck air from the lowest areas and exhaust it out the roof.

In a recent test, a diesel engine bus was parked 35 ft from one of the alarms, its motor running. Within a few seconds, the alarm had picked up the exhaust fumes. The amount of CO in the fumes was sufficient to energize the ventilating fan.

Ventilating fans with their 3 hp motors are housed in louvered enclosures on the roof of the garage.



Simplified Form For Physical Inventory

DAVID MARKSTEIN
New Orleans, La.

GIVEN even the most perfect of perpetual inventory systems, an *Indoor Comfort* dealer needs occasional physical inventories. These are regarded with all the eager anticipation with which he regards a dental appointment to have two teeth pulled without benefit of novocaine.

However, a physical inventory need not be such a painful occasion, nor one that ties up the staff for hours and days on end, provided an extremely simple system is employed. This, or any similar method for applying novocaine to the dreaded day of physical inventory, can give an accurate count and correct valuation in minimum time and with minimum effort.

A Necessary Evil

Why take a physical inventory anyway, ask some dealers. The answer is that it's necessary for finding out how much it cost a company to do business. The heating and air conditioning contractor can't tell from his purchases alone how much it cost to put sales on the books. It is only by dovetailing purchase figures with facts about existing inventory that he knows how much of the purchase money is still tied up on shelves and in stock, and how much went into the bank balance in the form of sales.

There's another and very pressing reason why dealers must take periodic physical inventories whether they wish to or not. The government demands it, in every case where the cost of the equipment or materials is a factor in determining gross profits. Shop supplies bought to be used up may be charged as expenses when they are purchased. Materials, appliances, and equipment which will be re-sold cannot be charged off when they are paid for. If materials and merchandise are still in inventory, they are obviously still assets.

For one example, consider the case of Fred Jones, owner of the Jones Heating & Air Conditioning Company, who bought some soap in August—and charged it off as purchased—and also materials, to the tune of $1000.00. Much of this consisted of air conditioning units destined for later sale in the right season.

Jones, beginning stock inventory for August was $943.00. His ending inventory, however, was $1081.00. The cost of materials sold was $1000.00–less the difference between $943.00 and 1081.00 (or $138.00). Since the $138.00 was still around in the warehouse, it obviously was not a factor in equipment cost during August.

Suggested Form

The form that is illustrated here is one suggested by the United States Department of Commerce. It is adapted only slightly from a form used by a large chain of retail stores, and has worked with great success over the years. It simplifies both the taking and pricing of physical inventory.

To illustrate how this form (or any similar one a dealer may wish to adapt to his own needs from this suggested format) can simplify the often arduous task of taking inventory—consider the case of the same owner (we'll call him Fred Jones again) as he took stock of

the stock in his Main Street store and shop.

Fred normally closes on Sunday. On this Sunday, he called three employees in to work overtime. He gave them these instructions:

"Inventory materials, parts, and equipment only–not supplies such as solder, electrodes, or sweeping compound. (Reason: The latter are chargeable when they are purchased on a day-to-day basis as supply items.)

"Don't delve into the purchase orders to get materials still in transit. If something hasn't arrived here, it isn't yet in our inventory.

"We have a few items that are here on consignment. Don't count them. They do not belong to us, aren't part of our assets at all. We figure in the ownership only when they are sold, and when that happens the items are no longer in the inventory anyway.

"Be sure to count the parts and accessories that are in the cases. They are part of our stock too.

"There are a few things in the warehouse across the street. Get them.

"Value equipment at the cost price."

Then the shop's inventory crew went to work. Three men were employed on the job. One worked as a writer, the second a caller, the third as a digger-out.

One person, the caller, counted and called out each item at a given price. As he would shout, "Three brackets at 45c," the writer had the option of entering three in appropriate columns for 45, or 45 in the three column. (Forty-five items at three cents total the same value as three items at forty-five cents.)

At the same time he marked the amount in appropriate columns, the writer called back the amounts, singing out: "Three at 45" to double-check.

As he shouted out a count, and heard the number relayed back to him by the writer, the caller tagged each group by placing a piece of colored paper on it. This guarded against the possibility of counting a group twice, thus throwing the inventory out of kilter and artificially increasing the book valuation of the inventory.

While these two were at work in the salesroom and sheet metal shop, the third man in the inventory crew–the digger-out — went to work in the warehouse across the street, counting groups and tagging them. But instead of placing a blank scrap of colored paper on each group, he wrote the unit count on the paper. When the caller and the writer later worked around to the warehouse, their task was speeded because the caller had only to remove the slips of paper and sing out the numbers he found on them. Removal of the tag proved that a count had been made and prevented the possibility of double counts in the reserve stock warehouse.

Before the job was completed, the writer found that he had filled up several columns completely but that didn't stump him. One of the filled-up columns was the dollar one. So instead of writing thirty in the dollar column thereafter, the caller would simply enter double this quantity—or sixty— in the 50 cent column, or four times the quantity in the 25 cent column.

If something was valued at $10.95, he marked 10 in the dollar column, 1 in the 50 cent column, and 1 in the 45 cent column—totaling $10.95.

For items with less than round figures, the writer used fraction columns in conjunction with his regular valuation columns. For example, something worth 21.57 1/3 cents was indicated this way: "21 in the dollar column, 1 in the 7 cent column, 1 in the 50 cent column and 1 in the 1/3 cent column.

After getting the list of merchandise and other items which were to be included in the inventory, Mr. Jones added up each column and placed the total at the bottom of the column; then transferred these totals to the column marked Quantity in the Recap on the right of the sheet. For example: he had 486 for a total in column 9, then listed 486 opposite the number 9 in the column marked Quantity. After re-listing all totals in the recapitulation columns, Fred multiplied them and placed each total in the amount column. The total of all the amount columns then gave the figure for total inventory.

Gas Supply Problem

GAS SHORTAGES during coming months must not be allowed to hamper production at essential defense plants unless absolutely necessary to prevent interruption in domestic service, C. P. Rather, assistant deputy administrator of the Petroleum Administration for Defense, told the Gas Industry Advisory Council at its quarterly meeting in November.

Mr. Rather, chairman of the council, pointed out that PAD is responsible under the Defense Production Act for assuring adequate supplies of natural and manufactured gas to meet defense production needs.

The council discussed the feasibility of a PAD general order setting forth the order of curtailment of gas supplied to those industries which normally operate under "interruptible" gas contracts.

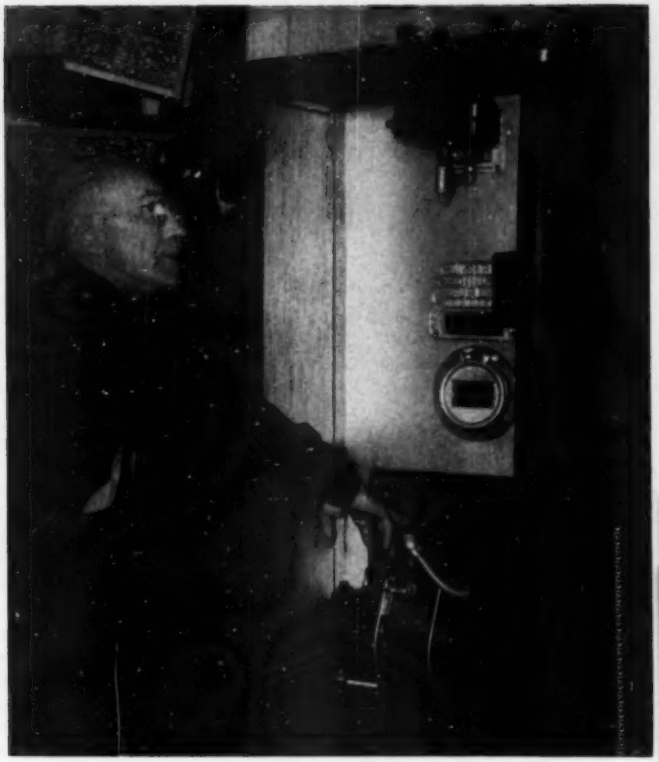
Purpose of such an order, Mr. Rather said, would be to conserve the stand-by fuel—fuel oil, coal, or liquefied petroleum gas—in shortest supply in any particular area, and not to firm up interruptible contracts. Plants served under such contracts should maintain adequate stocks of stand-by fuels, he said.

The council also discussed the possibility of establishing priorities for curtailment of firm industrial loads in cases where gas shortages might threaten service to domestic consumers.

The discussion also made it clear that historically the gas industry has generally had freedom of action in selecting plants for cut-offs when necessary to protect service to domestic consumers.

Following the discussion, Mr. Rather said that it appeared that any order classifying industries on the basis of relative essentiality would be inflexible, might put the gas industry in a straitjacket, and might do more harm than good.

George Dancy, business manager, demonstrates oil fired furnace features to prospect in showroom. Most sales are closed in the showroom itself.



Lee Wagener

Radio Spot Commercials Change With Seasons And Promote Warm Air Heating Contractor

HARRY L. SPOONER
Peoria, Ill.

WHEN Lee Wagener, proprietor of Lee Wagener Co., heating and sheet metal contractor, Peoria, Ill., started in business in 1933, he had a good background for the business, having had 10 years' experience working for a wholesale sheet metal concern.

Permanent Site Selected

After occupying several leased locations for the business, three years ago he purchased a two-story brick store building at 701 N. Perry Ave. 27 by 55 ft in size. Last year he built an addition to this building, also 27 by 55 ft, for the sheet metal shop, using all of the first floor of the original building for display, sales room, office and engineering facilities.

The Wagener concern specializes in consumer heating and sheet metal work, doing very little in the industrial field. Mr. Wagener likes to regard his business as that of a manufacturer and merchandiser of sheet metal products. For the past few years, most of his work has been in "*finger-tip heating.*"

"Our largest volume of business comes from building contractors," says Mr. Wagener. "We do business with some 60 building contractors, who ask us for bids for heating equipment for new and remodeled homes. However, we also do a large business with individual homeowners. But no matter whether the customer is a building contractor or a homeowner, practically all of our business is done on contract with very little on a time and material basis."

The Wagener company handles gas, oil, and coal furnaces, gas burners, oil burners, incinerators, portable air conditioners, and water heaters.

Service

With the weather getting warmer all the time, you'll be giving your heating equipment a rest from the day and night operation of winter. Well, often it takes more than a rest to put your furnace in shape for next winter. Why not call on Lee Wagener Company for a thorough check-up — to put your heating system in perfect condition. Lee Wagener Company service is available to you 24 hours a day — call them anytime. . . For furnace service and for Weir-Meyer heating equipment, remember Lee Wagener Company, 701 North Perry.

Effie Sams reads these commercials

New Installation

A new furnace must be installed by a capable dealer before you will benefit from its performance quality. That's why it will pay you to buy Weir-Meyer equipment from Lee Wagener Company, 701 North Perry. Lee Wagener Company has a reliable reputation, built up through years of satisfactory service to customers. Whether you need heating equipment for a brand new home or are seeking a replacement unit for your present home, Lee Wagener Company can recommend and install the correct unit from the 114 furnaces and burners in the Weir-Meyer line of heating equipment. . . Select the unit you want at Lee Wagener Company — and you can be sure that the installation will be expertly engineered. For new furnaces and 24-hour furnace service, remember Lee Wagener Company, 701 North Perry.

To interest prospective customers in its products, the company has a well developed promotional program. In this, newspaper advertising, radio, and the phone book play an important part. Newspaper ads are used six days a week in the two daily papers on a yearly contract basis. Mr. Wagener believes in using small ads and running these constantly. The little ads appear on the home page of the papers.

The phone book produces many inquiries because of a 1/6-page ad in the classified section under the heading of Furnaces.

The firm has a series of spot radio announcements over local station WIRL. One announcement is given each day six days a week. This is shifted from place to place on the broadcast. The contents of the announcements follow the seasons.

Name is Promoted

"In our various types of promotional work," says Mr. Wagener, "we try to play up our own name rather than brand names of products carried. We stress our years of experience and our reliability. After a heating system is installed, it is we who have to service it. The manuafcturers of our products depend upon us to take the responsibility for the right kind of an installation and for servicing it afterward. The homeowner, likewise, has to depend upon us for service, so we try to impress our own name upon them.

"Another thing, we ask prospective customers to come and see us. As no two heating installations are the same, it is not possible to quote prices over the phone or to describe heating equipment with any accuracy.

"To show them exactly the difference between different types and models of heating equipment, we have a large display room, where all types of furnaces are shown, including models for basement, attic, floor, perimeter type, etc. as well as burners, air conditioners, incinerators, space heaters, hot water heaters, etc.

One common complaint of housewives is that many furnaces will heat the rest of the home but do not heat the basement itself. To show them what can be done in this regard, we have a furnace set up on the floor complete with ducts and registers, including an outlet for heating the basement.

"Our floor display also forms a window display as our large front windows allow the equipment to be seen from the street.

No Doorbell Pushing

"We do not do any house-to-house canvassing to secure leads for sales. However, we make a quick follow-up by personal contacts of leads secured from our various types of advertising or from pleased customers who tell neighbors and friends about us. Our men who make these personal contacts are men who are both engineers and salesmen."

The location of the store is such that there is a heavy motor traffic past it. Large signs painted on both sides of the building attract attention from motorists

Here is the long bench for gutter production that is described in the article.

going in either direction. These signs are lighted until 11 p.m. each day. Small signs are painted on the windows.

The new shop forms a good advertisement as it has a large picture window and the operations are visible from the street.

Service is Important

The Wagener firm has a complete service department. A complete stock of parts and supplies is kept in the store for selling over the counter. One man is employed who does nothing but service work. He is on call 24 hours a day for emergencies. He has a truck which carries a complete stock of parts and supplies at all times. He keeps the truck at his own home so he is always available for both day and night calls. Three other trucks are maintained for delivery of materials to jobs.

The set-up of this business is somewhat different from some contracting firms. Mr. Wagener is a mechanic, not an office man. His problems are related to personnel, to seeing that finances are available for paying for help and materials, and to general supervision of the jobs outside. He has a manager for the business, George Dancy. Mr. Dancy has had years of experience in the sheet metal business and so is able to solve any problems involving sales, engineering, and records.

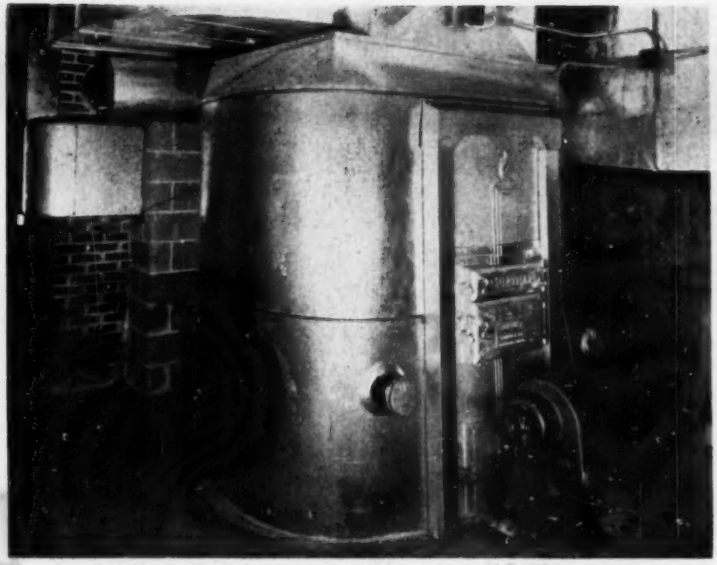
Four cars are maintained for the use of the sales and engineering department. A unique set-up in this department is the fact that the sales-engineer is the only person from the firm with whom the customer comes in direct contact throughout the entire transaction. He follows up a lead by calling personally at the prospect's home, where he finds out what type of heating equipment is required. He then takes the prospect to the display room to see and learn about the various types of equipment.

When the prospect has decided on a model, it is the sales-engineer with whom he makes the contract for installation. The sales-engineer then makes a heating survey of the house and selects the heating equipment required. He may also propose an incinerator or other accessory equipment.

He then comes back and makes a list of specifications for all material required. He also makes a drawing of any special fittings which may be required. He takes

(*Please turn to page* 118)

Functioning air conditioning units set up in the showroom are a source of many sales.



A 700,000 Btu unit of the type frequently used for garage applications. Many other buildings fall into the same size category.

Wisconsin Code Requires Heating And Ventilating In All Commercial Garages

Home Heating Co., Eau Claire, has installed many heating and ventilating systems in large buildings following the regulations of the Wisconsin code.

RHEO RIOPELLE[1]

and

ROGER OSTREM[2]

A GARAGE can be a deadly place in winter. Or it can be a pretty decent place in which to work or do business. It can have a dangerous concentration of carbon monoxide. Or the mechanics can work there all day and go home without a headache. Gasoline vapors and alcohol fumes can accumulate in a garage. Or they can be exhausted and replaced with good air. A heating system with a good built-in ventilation system makes the difference!

It may be said that to heat a garage is costly enough, that to provide fresh warm air in addition is beyond reasonable expectations. Wisconsin garage owners, however, must heat *and* ventilate their buildings. There is a state law, a state code, and an active inspection system in force, each designed to obtain conditions of safe employment and safe places of work. Garage ventilation is a must. Fresh air, tempered fresh air must be brought into the garage. Foul air must be exhausted in specific quantity.

A Simple System

Let us design a simple heating and ventilating system for a hypothetical Wisconsin garage according to the state requirements. This garage will have a repair department covering 2,000 sq ft of floor area. The building, including repair department, display room, parts room, and others has a computed heat loss of 200,000 Btu per hour at — 14 F outside, 65 F inside. The ventilation load must now be determined to arrive at the total heating and ventilation load.

[1] *Field engineer, Premier Furnace Co.*
[2] *Assistant building engineer, Wisconsin Industrial Commission.*

The minimum volume of *fresh air* required by code is 1½ cfm per sq ft of garage floor area. Space to be used for repair work is basis of calculation. For the 2,000 sq ft for this design, the fresh air requirement is 3,000 cfm. This volume must be heated to room temperature. To heat 3,000 cfm from — 14 F to 65 F requires 255,000 Btu per hour. This load added to construction heat loss totals 455,000 Btu per hour. From this information, a properly sized heating plant can be selected.

Choice of Heat

The type heating plant usually depends on the owner's wishes. His preference may be a forced warm air system, or a steam system, or a gas fired unit heater system. Note that a hot water system is not a permissible choice. There is reason for the omission. In the preceding paragraph, it was shown that for the example, 3,000 cfm outside air must be drawn in and heated at a temperature of — 14 F. Unit heaters operating on hot water are susceptible to freezing when subjected to such low temperatures. (Wisconsin design temperatures range from — 14 F to — 32 F) Hence, hot water heating systems are not permissible in garage buildings. As a consequence, steam systems are used extensively in the larger garages. Forced warm air systems are, however, most numerous. This is obvious from the fact that there are a greater number of relatively small garages, service stations, body shops, and farm implement buildings. All of these buildings, by definition, are classified as garages. Other buildings in this category are fire stations, boat houses, and interior truck loading docks.

A discussion of all types of heating for buildings in the garage category would involve much repetition. Whichever type heating system is chosen, it must function to provide the same degree of heat and ventilation. For the sake of brevity and general interest this discussion is limited to the forced warm air system.

Duct Design

We have determined the furnace capacity required for our example, i.e. 455,000 Btu per hour. Now let us consider ductwork design. The fresh air intake shall be 3,000 cfm. The intake shall be located at least 2 ft above grade to avoid drawing in dust or snow. Intake velocity being held to 1,000 fpm the intake cross sectional area becomes 3 sq ft or 432 sq in. The intake duct is led to the blower housing or fan room.

Because there is no need to introduce fresh air when the building is not in use or is closed for the night, the intake duct may be equipped with a shut-off damper. But a special arrangement is required at the damper location where the return air duct shall be joined to the fresh air duct. The damper shall be on a single hinge, and shall be located to permit 100 per cent opening of the fresh air duct during business hours. In the open position for fresh air the damper shuts off a large portion of the return air, Clearly, the damper in the junction

Twin blowers move large volumes of air at low speeds to provide for adequate movement of air to all occupied spaces. No filters are installed in the fan room.

R. B. Johnson, owner of Home Heating Co., checks the height of the return air intake. It must be 72 in. above the floor.

permits a 100 per cent fresh air opening in one position and permits a 100 per cent recirculation in the other position. The former position is for business hours introducing fresh air; the latter for off hours using recirculated air.

In most buildings return air grilles may be located at or near the floor line but not in the floor. However,

Basement ductwork showing bracing and stiffening required by state code.

in a heating system designed for a garage the return air grille must be at least 72 in. above floor level. A location below this point might allow heavy fumes and gases to enter the air distribution system and cause serious trouble.

In office and display rooms adjacent to the repair floor, return air faces are often omitted or designed to handle an air volume much less than that supplied. By so designing the ductwork a slight pressure is established on these rooms which tends to block any inflow of air from the repair area. Where no return air grilles are located in these rooms, a transfer grille can be installed in a wall or door panel to let the air pass out into the garage proper.

High Location of Return

Location of return air openings at the 6 ft level, being somewhat unusual, is often blamed for unsatisfactory heating. Perhaps the charge is justified, but only when the warm air distribution is faulty or inadequate. After all, a building can be heated with no recirculation of air; all fresh air, and all exhausted. Too often the distribution system is designed to meet a price, or simply to get by. Scarce materials often lead a contractor into skimping on ductwork, which must be correctly sized for good distribution. It is important to install adequate ductwork to supply enough warm air to do the best job. How much air and what size blower will be required for the example?

The volume of air required for the repair area is 3,000 cfm. By calculation the heat loss of the office, display room, parts room, etc., has been determined at 100,000 Btu per hour. By applying the permissible multiplier for register temperature of 120 F., namely, .017, it is found that 1,700 cfm will be necessary to carry the heat into

(*Please turn to page* 116)

Drawing for Morse Article

Here is the graph for determining air required for combustion that is mentioned on Page 44, November, 1951, *American Artisan*.

Locate the bonnet output in Btu per hour along the bottom. Follow this value vertically to the curve. Trace a horizontal line to the left; read the amount of air that will be required for combustion on the left scale.

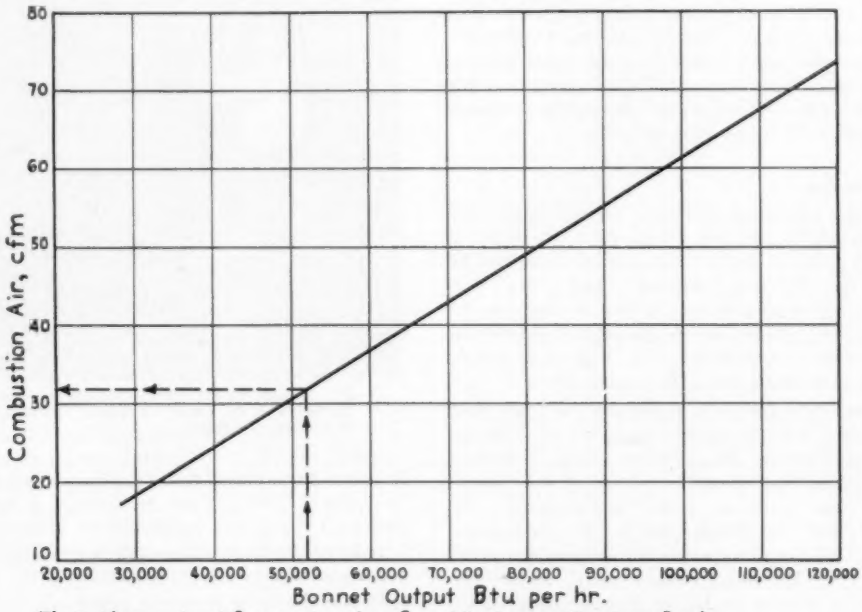


Fig.3 Air required for combustion for Oil, Gas or Coal as fuel

Planning A Successful Sales Circular

To some people printing and the graphic arts are a branch of black magic. The author points out that it is easier to develop your own literature than you might think.

LAWRENCE E. GICHNER
Washington, D.C.

PUTTING a message across to the general public of the myriad of items that are and can be effectively made in the average sheet metal shop is a knotty and complex problem. Several decades in the industry firmly convinces the writer of this fact.

This article seeks to serve as a thought-starter for the alert and ambitious sheet metal executive who wishes to attract more customers and boost sales by better informing those customers he already has.

No article, no matter how well meaning, can create a tailor-made conclusion to fit precisely the needs of all. But an article can point up all the features of what successful executives have done and offer a guide to aid one in arriving at a solution for one's own particular firm.

Telling your story in pictures is half of the answer. Selecting just the right pictures is the other half. Go over this useful check list and to get your thinking started mark those that apply to your organization features. (See Check List)

How to Start

Assemble the pictures that have already been taken in the past, since illustrations are the key to the story you want to tell. Regardless of how old they may be, if they are clear, sharp, and pertinent they are usable. If there are not enough, have additional ones taken.

Most important, keep uppermost in mind the product and service you have to sell and its appeal to the customer. Appeal can't be stressed too much.

Feature the Product You Sell

Including pictures of the exterior of your shop or history of your firm is helpful but it definitely should play a minor role in your advertising circular. Your customer is not buying real estate or printing matter but your product. Your product should be the first item that catches and holds his attention.

The number of pages your circular should be depends on the size of your story and the amount you wish to spend. Four pages thoughtfully composed can be as effective in terms of results as a volume. Use of a single color can add considerably to attractiveness. The use of white space for easy readability should not be overlooked.

Featuring A Single Product

In the 12 page brochure the Dixie Manufacturing Co. of Baltimore, who also install exhaust fans and duct collectors, devote the entire issue to their stainless steel products which they make for the food industry. On a single page each, they featured the tanks they manufac-

A handy check list for items you can feature in advertising your firm and its products.

	YES	NO
RESEARCH DEPARTMENT	☐	☐
DESIGNING DEPARTMENT OR DRAFTING	☐	☐
ENGINEERING DEPARTMENT	☐	☐
OFFICE LAYOUT	☐	☐
GENERAL PLANT PHOTO		
INSIDE	☐	☐
OUTSIDE	☐	☐
PRODUCTION	☐	☐
SHEARING	☐	☐
FORMING	☐	☐
CYLINDRICAL ROLLING	☐	☐
STAMPING	☐	☐
WELDING	☐	☐
GRINDING	☐	☐
DRILLING	☐	☐
INSTALLATIONS	☐	☐
FINISHED PRODUCTS	☐	☐
OUTSIDE ERECTION	☐	☐
IMMEDIATE LOCAL	☐	☐
500 MILE RADIUS	☐	☐
GO ANYWHERE NATIONALLY	☐	☐
GO ABROAD	☐	☐
ORIGIN OF ORGANIZATION	☐	☐
HISTORY OF FIRM	☐	☐
PERSONNEL	☐	☐

your fabrication problem in any metal
SOLVED
SUPER-STEEL SHEET METAL COMPANY
11 INCHES
8½ INCHES
36 pt. Futura Ultrabold l.c. in reverse on blue plate
hand lettering in black
outline H.T. or drawing of hand with pencil in black
18 pt. Futura Ultrabold caps — black on white
12 pt. Futura med. caps
hand lettering
5 REASONS WHY
SUPER-STEEL CAN HELP YOU
24 pt. Futura Ultrabold l.c.
12 pt. Garamond bold l.c. 2 pt. leads — 27 picas meas.
H.T. — 32 picas wide 34 picas high
1
2
3
4
5
12 pt. Futura bold caps
10 pt. Fut. Med. 8 picas meas.
Numbers 60 pt. Goth. Condensed

Sample rough layouts with type indicated

ture for salad dressing, fruit processing, wine, and canning industry. They also show the equipment they make for cafeterias and laboratories.

The illustrations are exceptionally good but indicate to the trained eye that they have been touched up. This observation is not made in a critical sense but simply to point up what frequently must be done with a picture of stainless steel since it often looks better to the human eye than it photographs. Because of its brilliant and reflective qualities, stainless steel requires better than average skill to photograph in many instances.

The booklet also shows excellent views of the inside of the shop and drafting departments but in size and importance, these are subordinated to the items they make and sell.

From time to time the Chicago Metal Manufacturing Co. of Chicago has issued four page color folders that are strikingly effective. Altho in their "large, modern highly systematized plant with over 200,000 sq ft of floor area" they are equipped to handle fabricating jobs — 26 gauge to ¼ in. plate in steel, stainless steel, copper, aluminum and other metals — in their advertising they do not show the finished products they make. Instead they feature the versatile operations their firm is equipped to perform and show sections of an item that have been sheared, bent, drilled, notched, rolled, punched or stamped.

Single Units or Mass Production

They say to the prospective customer "We have every facility to serve you. In single units or mass production for food processors, meat packers, oil refiners, chemical industries and scientific instrument manufacturers." In each of their circulars they stress "Mail your blue prints and specifications today. We will gladly quote without obligation."

Ductwork Especially

Morgan Brothers Co. metal fabricators and contractors, of Pittsburgh, Pa., have issued a 24 page booklet with slick covers named "A Record of Achievement" and featuring the slogan on each page "Since 1907." The booklet opens with an exterior photo of the plant and pictures of the founder of the firm and officers. It shows one of their first sheet metal jobs done on a small two story building and then a magnificent photograph of three recently constructed modern office buildings that required 323 tons of ductwork for the heating and ventilating systems. A page of four illustrations each is devoted to plant operations and plant machinery. The reader is told.

"In the ventilation field, our sheet metal piping and ductwork systems are in use throughout the United States and have been exported to points as far distant as China and Iceland. In any composite picture of metropolitan Pittsburgh we can point with pride to all types of buildings having our installations . . . industries, office buildings, hospitals, housing projects, department stores, schools, and churches."

Full Page of Pictures

National Metal Fabricators of Chicago have issued a colorful blue and white six page sheet that folds to the center which on one side shows a full page of four photos of their mechanics cutting sheets in shears, stamping cylinders at a huge punch press, welding and grinding. On another full page of pictures one sees illustrated completed products such as stainless steel sinks, tanks, various shaped machine guards, hoppers, and chute assemblies.

Return Card

National Fabricators have included with their circular a very simple but clever double reply card with postage free feature that appropriately reads:

"Our business is "Fabricating Sheet Metal Products and Light Structural Steel Products", according to our customer's specifications.

The circular appended portrays various products we have manufactured to our customers' complete satisfaction.

Please let us know if we can count on you giving us an opportunity to quote your requirements.

Thank you for your consideration."

After detaching the above one checks either one of two sentences before returning.

"We can use your services, and shall give you an opportunity to quote.

We have need for your services now and are sending specifications"

There is also space for "Remarks".

Retain for Files

Nazareth Steel Fabricators, Inc. of Nazareth, Pa. have a four page full letter size folder in black, brown, and white which they send out with a letter and two page buyers reference. The letter with their trade mark, a worker, nude to the waste driving a sledge hammer against a large dark triangle reads

"We fabricate — stacks, chutes, bins, hoppers, tanks, breeching, ducts, machine bases, screw conveyors, troughs, frames, gas piping and light structural steel.

Our equipment, of the most modern design, for economical production, can form, shape, and weld from 16 gauge to ⅜ and ½ in. in thickness.

Review the list of names on the back of the folder enclosed. These customers too, consider low cost and good workmanship.

Don't miss the opportunity, when getting bids, to know you have the best possible price.

Your inquiries are most welcome."

On the back of the folder Nazareth asks "Judge us by the calibre of the industry we serve" and offer a list of "Typical satisfied customers" with over 150 names of prominent firms.

On a two page buyers reference they list items fabricated. This list they urge the buyer to retain in his files for future reference.

Neat and attractive display gives insight into character of the firm.

Sheet Metal Contractor Handles Increasing Volume Of Restaurant And Hotel Work

This month's cover photo indicates how impressive the L & S showroom is to the passing prospect. An attractive showroom helps make many a sale.

ROBERT F. WELCH
San Diego, Calif.

CATERING specifically to the needs of restaurants and hotels has meant steadily climbing profits for a five year old California firm. L & S Sheet Metal Works at 224 West Rosecrans Ave., Compton, has learned that it pays handsome dividends to concentrate on the type of work their trade territory demands.

More important, restaurant operators are made aware that the firm is ready to serve them. This is done with minimum expense and fanfare, but is nevertheless highly effective. It requires only a small advertising budget and no outside salesmen.

The innovation used by L & S to boost volume is simply the building which serves as headquarters. There are some sheet metal contractors who believe that any kind of a shop will do as long as the work is satisfactory. But this fact is important: L & S has achieved a 100 per cent increase in hotel and restaurant sales since they expanded two years ago.

And they were doing a considerable volume of business at the time the improvement was made. In other words, a change in physical layout has made a good thing much better.

L & S Sheet Metal Works is a partnership owned by Leon Lefebvre and George Soneff. These two men launched their business in a 92 by 30 ft building at the same address they now occupy. It was a conventional frame structure with nothing to distinguish it from hundreds of other sheet metal shops.

Showroom Planned

As work done for restaurants grew in importance the partners decided they should capitalize on the reputa-

tion they were building. So George Soneff designed an ultra-modern showroom which they proceeded to erect on the front of the original building. By doing most of the work themselves they completed it on a very small capital investment, less than an ordinary addition would have cost through regular construction channels.

High Visibility

Outstanding characteristic of the new section is its liberal expanse of plate glass running from floor to ceiling along the front and one side. High visibility converts virtually the entire sales area into an attractive window display. At the sidewalk's edge, along the base of the glass, a window garden has been planted which contributes a great deal to the cool appearance of the building. The plants are a large, hardy variety requiring minimum care.

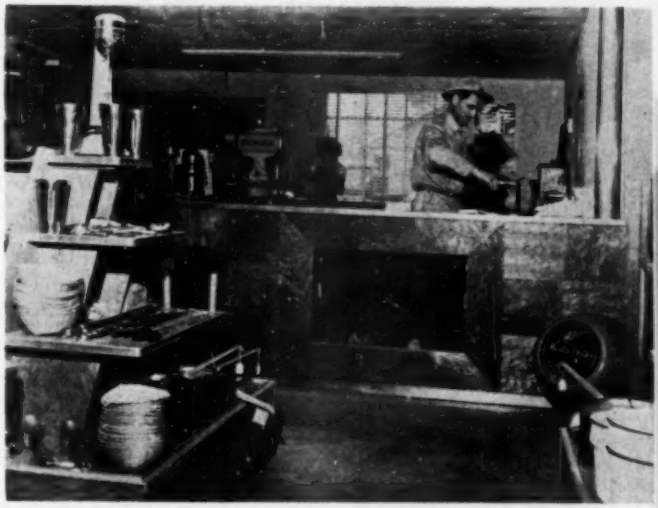
The partners spent about $2,000 covering the marquee with stainless steel. They also covered the two center doors and built the cans and lettering for overhead neon-lighted signs. Attention is focused on the words Restaurant Supplies.

The showroom measures 30 by 65 ft. including office space. It marks the partners first venture into merchandising, and they have done an admirable job of arranging eye-catching displays which are always maintained in a neat and orderly fashion. In addition to the more important lines such as ranges and steam tables, displays also include non-metal products like glassware and china.

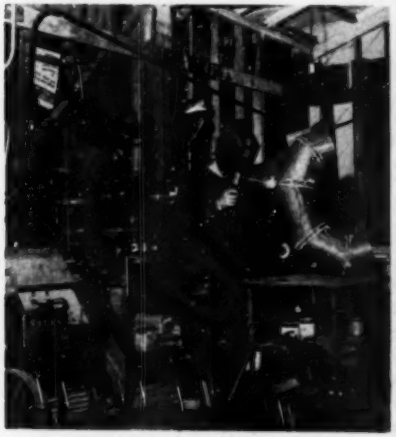
While the showroom is designed to sell all this merchandise, actual floor sales are not the most important benefit. They seldom average over $100 per day for any given period. Although this "is certainly not an inconsequential" item, the real advantage comes from the number of installation jobs traceable to the showroom.

Customers frequently remark that they had passed the spot regularly and never knew the shop existed before the modern addition was completed. Now they can hardly fail to notice it and be favorably impressed. In short, firm indentification has been accomplished just as surely as with an extensive advertising campaign. And sales of show-

(*To page* 124)



Leon Lefebvre behind the counter which separates office section. Many customers have ordered aquariums like the one in the counter.



As much work as possible is done in the shop rather than the field. Having all tools and equipment handy aids in quality work.

Conversion of refrigerators is an important phase of the business. Glass doors and metal covering are added.

Two Types Of Perimeter Heating Provide Equal Comfort When Applied To Crawl Space Houses

ROGERS FOLLANSBEE

President, Mechanical Home Systems, Inc.

Independent test results described by Warren E. Wilson in American Artisan, Jan. 1948, pointed to the desirability of discharging warm air into the crawl space to provide warm floors. Supply outlets at the perimeter increase the efficiency of the system.

EVERYONE now seems pretty well agreed that a forced warm air system with perimeter delivery provides the kind of comfort the industry can be proud of. However, the method of conveying warm air from the furnace to the rooms of a house is still a subject of debate.

Type of Distribution

The argument is hottest when distribution for a house built over a crawl space is being discussed. One method of distribution involves separate duct connections to each register while the other utilizes the crawl space as a plenum from which air flows by pressure through the registers without a duct connection. The latter system reduces the quantity of ductwork required.

Before considering the merits of methods of distribution for this type of construction, let us review the fundamental concept on which perimeter heating is based. The idea is to replace heat *at the point of loss* — to discharge a blanket of warm air upward over window surfaces. This prevents cold air from being formed on the inside glass surfaces and also tempers cold air which infiltrates through the crackage. Heat losses at windows are large and if they are not offset by an effective method of perimeter delivery, the air adjacent to the surfaces becomes dense and falls in the form of objectionable currents, falling across the floor in the living zone causing drafts and chilling the floor. On the other hand, drafts and cold floors are not found in properly designed perimeter systems because the formation of cold air is prevented. Warmth imparted by ductwork in or under a floor is only contributory to its temperature. Its temperature is also influenced by the air in contact with the upper surface. Another point to consider is that the distribution system which most positively delivers warm air to the points of heat loss is the one which will give the most positive results and will be the easiest to balance.

Small House Builders

The Lockweld Corp. of Chicago and Oaklawn, Illinois, are fabricators and erectors of small houses built over crawl spaces. The company is the successor to a building operation which five years ago was specifying perimeter heating in similar houses built on concrete slabs. So it was natural that Lockweld should adapt perimeter heating to its current projects.

Fig. 1 shows the trunk and branch system which has been installed in all but one of Lockweld's houses. A downflow furnace located in the corner of the utility room discharges into a plenum below the floor. The plenum in turn is connected to trunks and branches terminating in floor diffusers located below windows — except in the bathroom where a register is located low on the sidewall. Neither the floor nor the ductwork is insulated. Insulation is applied to the walls of the crawl space so heat loss of the ductwork will be gained by the floor and not lost to the outside. All ventilation openings in the crawl space are closed during the heating season.

Successful Tests

Perimeter delivery together with the warmth imparted by the ductwork results in warm floors and complete comfort in all rooms. This has been confirmed by tests during the 1950-51 heating season. Floor surface temperatures range in the low 70's and floor to ceiling gradients do not exceed 4 F, except in one bedroom where one window was left unprotected and thus permitted to spill cold air on the floor. However, this imperfection did not cause any objection by the owner.

A variation of this distribution system suggests a simple but effective trick often used to impart warmth to floors above crawl spaces in houses with partial basements. At distant corners openings are made in the supply ductwork which discharge

a controlled quantity of warm air directly into the crawl space. If sufficient warm air is discharged to cause a substantial circulation and warm the space, the ground of course should be covered with a suitable moisture barrier. Otherwise, air returned from the crawl space to the furnace may approach saturation. This excessive moisture would have a serious effect on the whole structure.

Crawl Space Plenum

For some years now, various experiments have been made to determine the feasibility of employing a crawl space as a supply plenum — a sort of ductless system. Many such installations have been made — a large number of them in the Detroit area and in Northern Indiana. Early trials disclosed that such plenums must be thoroughly protected against moisture gain and that the edge of the plenum must be well insulated. It was also learned that if heated air was forced straight downward toward the floor of the plenum, the floor near the furnace became excessively warm and distribution from the various outlets was quite uneven as to temperature. The experience gained from these early installations indicated that stub ducts extended from the furnace plenum and aimed at the cold extremities of the building would largely overcome these difficulties.

Figure 2 illustrates the stub duct pattern which was used in one of the Lockweld houses which was finished late last season. The heat loss of this house including the heat loss of the crawl space is approximately 52,000 Btu/hr. Five 6 in. round ducts are lead away from the plenum toward points of greatest heat loss. The furnace blower is set for continuous operation.

Observations indicate floor temperatures in the high 70's and low 80's with floor to ceiling gradients not exceeding 5 F. In this test house no additional supply outlets were installed. However, it is obvious that one of the advantages of this type of distribution system is that it permits complete flexibility. Outlets may be "tapped in" at any point desired without adding to the cost of the duct distribution system.

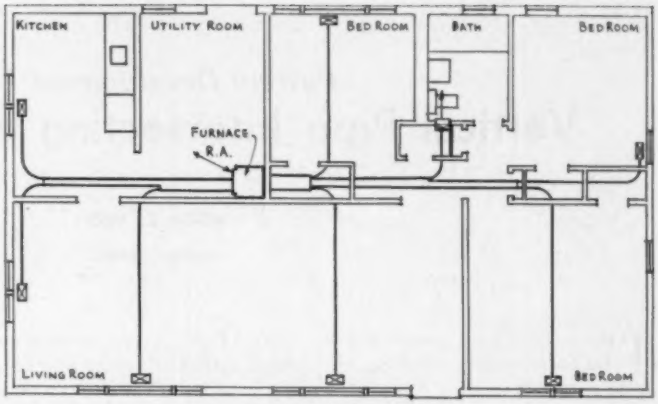


Fig. 1 Perimeter plan.

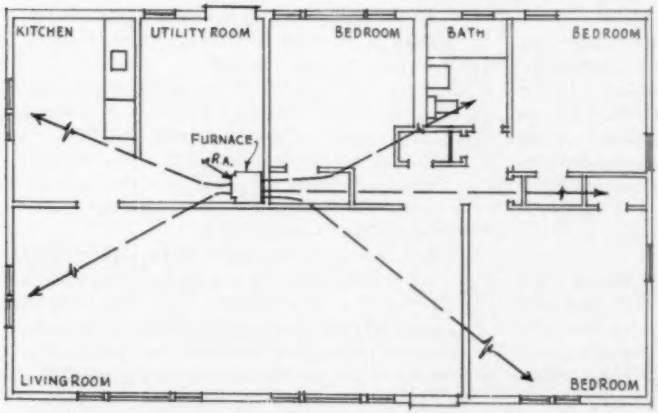


Fig. 2 Crawl space plenum system. Register locations are identical with those in Fig. 1.

The crawl space supply plenum system is, perhaps, in technical violation of NBFU rules. If however the crawl space is not used for fuel or other storage, and if it is devoid of electric wiring, it is difficult to imagine an interpretation which would outlaw the application. It seems obvious that this system is less costly to install than a duct connected system. However, these savings are largely offset in overall building cost by additional charges for sealing and insulating the crawl space.

Comfort Assured

Both distribution systems described in this article provide consumer satisfaction. The type selected will depend on local conditions and customer preference. A ducted system is positive in its performance — but materials for ductwork may be hard to find in the months to come. An "open" system performs well and has special consumer appeal because of the warmer floors it naturally provides — but the warm air heating contractor must rely on the builder to seal and insulate an essential part of a system for which the heating contractor bears overall responsibility.

Both systems have merit. In choosing between the two, forward thinking warm air heating contractors should only keep in mind that indoor comfort is their goal and that furnace sales — not elaborate duct systems — are, what count where profits are concerned.

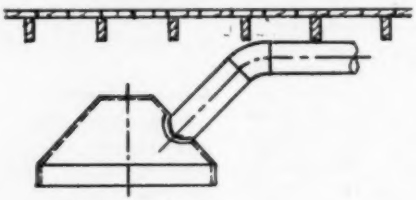
Pattern Development For
Vertical Pipe Intersecting a Right Cone

HUGH B. REID

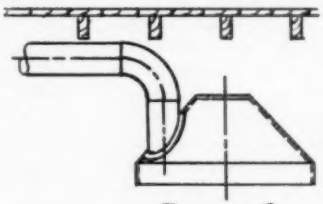
Detroit, Mich.

THE problem being presented is the type of fitting that could be used effectively in residential gravity heating.

For example, the average basement is 7 to 7 ft 6 in. high, the furnace bonnet begins approximately 5 ft from the basement floor. If the tap-in pipe is at an angle to the center line of the furnace plenum as illustrated by detail 1, the result will be a low head room point. Detail 2 illustrates that by using a tap-in pipe parallel to the center line of the plenum, the branch pipe can be raised to the ceiling height directly above the furnace and a 90 deg elbow fitting used. This elbow can be revolved on the plenum tap-in pipe to line up with the branch pipe going into the wall. This will eliminate the low head room point in the basement, and will add to the efficiency and appearance of the installation. Observe too, that detail 2 is a much simpler fitting to lay out than detail 1. This should merit the consideration of the economy minded sheet metal contractor.



DETAIL 1



DETAIL 2

A study of the plan and front views indicates that the fitting is symmetrical about the horizontal and vertical center lines. From this analysis, it is concluded that all patterns can be laid out from a half front view drawing.

Points For Lines

It should be noted that the developed line of intersection between the taper and pipe has been eliminated and points have been substituted. This is to clarify the method of finding the developed revolved points as shown by the directional arrows. Note also that the spacings for the intersecting pipe pattern are not equally divided on the circumference line of the pipe pattern. The explanation is that the developed lines are projected from the revolved points on the half circle representing the round pipe and marked six unequal spaces; this spacing must coincide with the plane of the developed lines as shown by *A,B,C,D,E,F,G.*

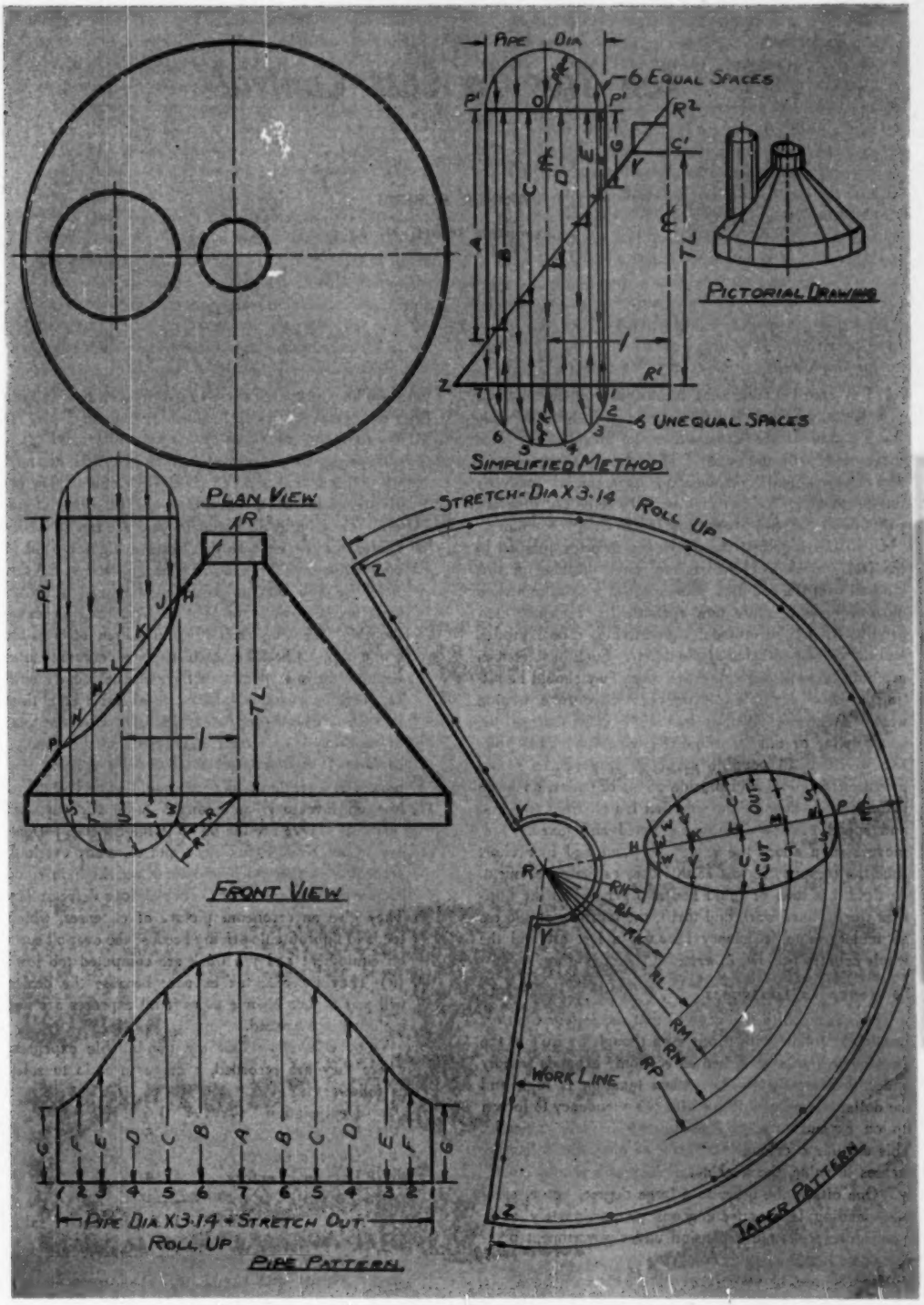
Solution Analyzed

The following is a step by step analysis to the solution to the problem.

Construct the simplified method drawing as follows:

1. Draw the center line and on this line establish the length of the taper as designated by the letters *TL*, and mark the points *R'* and *C'*. From *R'* and *C'*, draw lines perpendicular to the center line. From *R'* measure the radius of the large end of the taper and mark the point *Z*. From *C'* measure the radius of the small end of the taper and mark the point *Y*. Draw an extended line through points *Z* and *Y* to intersect the center line at *R²*.
2. From the center line of the taper, measure the required distance marked 1 and draw the center line of the pipe parallel to the center line of the taper. On this line measure the length of the intersecting pipe as shown by letters *PL*. On both sides of the center line measure the pipe radius and draw the lines marked *A* and *G*.
3. With the intersection point of the pipe center line and the pipe diameter line marked *O* as center and radius *P'R*, draw a half circle. Divide the half circle into six equal spaces and through the equally spaced points draw extended lines parallel to the center line of the pipe and intersecting line *R'-Z*.
4. From the intersection point of the pipe center line and line *R'-Z*, draw a half circle the radius of which

(*Please turn to page* 124)


PIPE DIA
6 EQUAL SPACES
PICTORIAL DRAWING
SIMPLIFIED METHOD
6 UNEQUAL SPACES
PLAN VIEW
FRONT VIEW
STRETCH = DIA X 3.14
ROLL UP
WORK LINE
TAPER PATTERN
PIPE DIA X 3.14 = STRETCH OUT
ROLL UP
PIPE PATTERN

Ten Tips To Cost Control

ARTHUR ROBERTS

Pompton Lakes, N. J.

AT A board of directors' meeting during the last war the members took a vote on the desirability of making a certain sizable expenditure and all but one agreed to go along with the outlay. The attitude of the remaining members can be summed up by a remark made by one of them. "We can save only 10 cents out of every profit-dollar so why worry too much about economies."

Upon hearing this, the dissenting director jumped to his feet and said, "There is too much thinking of this kind all over the country. Businessmen who were nickel-nursers years ago are now spendthrifts, excusing their prodigality by government squandering, excess profits, and the decreased value of the dollar. Such businessmen are only adding fuel to the fire when they should be setting a good example in order to discourage wanton waste. Whether taxation leaves 90 cents out of the profit-dollar or only 9 cents, it is sound business practice to effect all possible savings. It produces a bad moral effect inside and outside of an organization when management takes the attitude that it's all right to spend and spend because it is being taxed and taxed. Employees soon adopt the same viewpoint and in a short time the company is just as thriftless as the government. In time this state of mind becomes general in the business world, hard work and thrift, the taproots of success go underground, efficiency becomes a lost art and the whole country wallows in waste."

Tendency to Looseness

There is much to this counsel that the *Indoor Comfort* dealer can follow with profit even though he isn't in the higher tax brackets. When an economy expands rapidly under the impetus of war, when taxation is high and the dollar decreases in value, there is a tendency to loosen up on expenditures, to consider outlays less critically. This attitude overlooks the fact that when the dollar decreases in value, the sales dollar increases proportionately. One offsets the other to a large degree, hence, careful spending is as advantageous proportionately as it was before economic expansion under government pressure came into the picture.

After a careful analysis of all factors touching this field, we have prepared these suggestions on how to keep costs down and profits up in this war economy.

1. ***Go over your overhead with a fine tooth-comb.*** It is surprising how overhead can be whittled down if all outgo is analyzed and checked carefully. The little loss-leaks, in the aggregate, are the worst offenders. They build up gradually and are not so easily spotted as the expense that takes a big jump all at once. From our experience as an analyst in this field, we find that an excessive overhead often results because dealers do not go over their expenses monthly, checking each item in search of possible economies. Checking each expense account total against previous months or the same calendar month of previous years is inadequate analysis at a time like this. Check every item that makes up the total of each expense account and whittle to the bone.
2. ***Include all legitimate expenses under overhead.*** Pay particular attention to depreciation, loss on bad debts, loss on inventory, and compensation for personal services. These are the non-billable expenses. Dealers do not get bills for them, and so, many overlook recording them. Such omissions run high in some establishments and result in two serious defects: (1) They give an erroneous picture of expenses, which tends to unprofitable pricing because the over-all costs on equipment and job work are computed too low: (2) They increase tax expense because the dealer will pay higher income taxes if all expenses are not included in overhead.

Test-checks show that the non-billable expenses, where they are recorded, average in ratio to sales as follows:

Depreciation	1.6
Bad debts	.5
Owner's salary	8.5
Loss on inventory	.4
Total	11.0 per cent of sales

The omission on non-billable expenses running around 11 per cent would bring the paper net for

such dealers 11 per cent more than the net shown by dealers who included these expenses. The danger in these omissions is that the dealer thinks he is earning much more than he really is, hence, he becomes lax on cost control and may short-price his jobs. We might mention that loss on inventory is not deductible as an income tax expense unless such loss is definitely determined by a physical count at the end of the year.

3. ***Check your insurance costs against the present value of property, working equipment and stock.*** See that you are not paying excessive insurance on original value when the value has depreciated since the policy was taken out. This cuts insurance expense. Many dealers are paying excessive insurance expense because they pigeon-hole their policy when received, renew it at renewal time, and do not consider the variations in asset values that take place from period to period. The insurance company will not pay for more than present value and they put the burden of fixing this value on the purchaser of the insurance. If he over-values or under-values his assets, that is his hard luck. A building insured against fire in 1940 for $50,000 may be worth only $35,000 today, or it may be worth $60,000. The policyholder should see that this change in property value is taken care of at renewal time. Insure for current value, otherwise you pay too much for the coverage or carry too little coverage. The inventory investment also changes from year to year, yet, too many dealers insure their stocks for the same figure from year to year.
4. ***Keep adequate stock control records.*** You should know what happens to your purchases of materials, supplies and merchandise. Laxity here becomes more costly as the cost of salables increases. We found losses on inventory running as high as 15 per cent of the average stock carried, enough to put a business in the red if the investment in the "carry" were high. Without stock control records it is impossible to determine whether the loss is due to theft, errors, damage, or what. Where dealers had stock control records the loss on inventory was as low as 1/3 of one per cent. No system will eliminate a disparity between book figures on inventory and the physical count. If the variance doesn't exceed ½ of one per cent of the average stock carried, your stock control is about as effective as it can be.
5. ***Know your job costs.*** To know these costs the dealer must use job costing forms. Too many dealers fail to cost their service and installation work. They rely upon some sort of mother wit to effect cost control. This is bad business practice. Job costing forms are simple in make-up. They are not hard to keep and they require little time. All one needs to do is list the materials used on a job, the hours of labor required to do a job and the overhead expense allocated to the job, which may be computed on a percentage of sales or a labor hour basis. If the overhead to sales ratio is 35 per cent and the selling price of a job is $500, the overhead allocation is $175. On a labor hour basis, the computation is different. If the dealer employs 480 labor hours a month, or 3 men working 40 hours a week, if his overhead expense for the month is $960, the overhead expense chargeable per labor hour is $2. If a job requires 50 labor hours, the overhead allocated to it is $100. If the dealer does not cost his individual jobs, he has only an over-all profit figure in the ledger. This over-all figure may hide the invisible losses on a number of jobs, losses that he can spot only by means of job costing forms.
6. ***Use sales promotion as an expense-reducer.*** If your burden is too high, you won't earn a profit even if you are careful about outlay. You can go only so far in keeping down waste and extravagance because some costs cannot be reduced. These are your fixed expenses, such as rent, mortgage interest, property taxes, depreciation and interest on long-term indebtedness other than a mortgage obligation. Such expenses remain the same regardless of volume. In some establishments the ratio of fixed expense is high and the management cannot cut expenses enough by direct action to earn a satisfactory profit. The only hope for profit betterment is aggressive sales promotion because when you increase sales, your fixed costs do not increase, hence your profits increase. The ratio of fixed to variable expense has much to do with the effectiveness of cost control. If the ratio is 5 to 1, variable to fixed expense, the dealer is usually in the safety zone. If the fixed expense is high in ratio, he should try to reduce it if he can. For example, by sub-leasing part of the premises, one can reduce rental, or ownership expenses, a fixed charge. By refinancing a mortgage at a lower interest rate, reducing it or paying it off, one can reduce the fixed charge for interest. A fixed expense is not as easy to prune as a variable expense, such as light, heat, salaries, and this is why the management so burdened must usually resort to effective promotion. The average advertising outlay shown by our studies was only 3/5 of one per cent. All dealers, not only those with high fixed expense, can spend more for advertising and selling promotion without wrecking their bankroll. Two per cent of sales would not be too high in this field.

   High fixed expense is usually the result of over-expansion, which increases fixed capital and the fixed expense to maintain the additional assets. In this war economy, with taxes and costs above the clouds, be wary of increasing fixed expense or you will find it difficult to effect maximum cost control. You'll have to approach the problem indirectly by spending more for business promotion.
7. ***Keep the investment in inventory at a safe ratio to the total current assets.*** In this field it should be about 35 per cent of total current assets, which com-

(*Please turn to page* 128)

Application of the Floor Furnace in the Heating of Small Houses

Part I

ROBERT K. THULMAN[1]

Heating equipment which is particularly suited to the small house generally built near defense plants may become increasingly important in the warm air heating picture during the current crisis.

AMONG the several devices and appliances used to heat small houses classified under the general category of overflow heaters in the floor furnace. Used originally in the areas in the South and Southwest where the climate is relatively mild, the floor furnace is now used in many small houses in the Northern sections of the country. It is principally suitable for use in one-story houses without basement and with a first floor of ordinary wood-frame construction.

It is the purpose of this article to explain the fundamental principle of the floor furnace and to describe its application to the heating of small houses.

The typical floor furnace is a warm air heating device, completely self-contained and arranged to be suspended from the floor construction. The device itself consists of four basic elements:

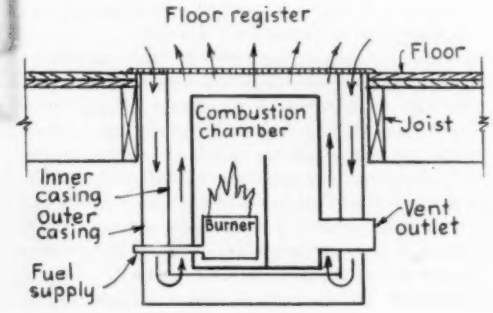


Fig. 1 Section through typical floor furnace

1. A combustion chamber equipped with either an oil or a gas burner.
2. An outer casing.
3. An inner shield surrounding the sides of the combustion chamber, providing a space between its inner surface and the sides of the combustion chamber and a space between its outer surface and the outer casing. It is arranged so that these spaces are interconnected at their lower ends.
4. A combined inlet and outlet grille fitting over the top of the outer casing at the floor level.

A cross section through a typical floor furnace showing the four basic elements named above is shown in Fig. 1.

The movement of air through the floor furnace takes place in the direction of the arrows shown in Fig. 1. This movement is increased when the difference in weight of the two air columns, the column of air heated by the combustion chamber and rising through the center of the device, and the column of cooler air descending in the space between the inner shield and the outer casing, is increased. This motive force, upon which circulation of air through the furnace depends, is known as the gravity circulating head. The circulating head increases with increase in height of the two air columns and with increase in temperature difference between the warm and cool air columns.

Floor furnaces are designed to be installed in one-story houses with a crawl space. The fact that crawl spaces are usually no deeper than necessary to provide minimum

[1]Mechanical Engineer, Housing Technology Branch (formerly Division of Standardized Building Codes and Materials).

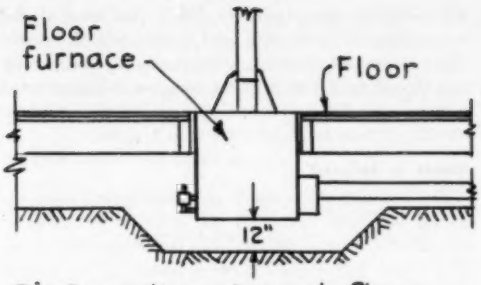


Fig.2- Section through floor furnace showing pit to provide required clearance

protection from termites; minimum amount of ventilation and minimum space for access under the house, restricts the vertical dimension of a floor furnace. In most installations the depth of the crawl space is insufficient to accommodate the floor furnace and a pit as shown in Fig. 2 is necessary.

Danger to Pit

The construction of such a pit involves the possibility of its filling with water and flooding the furnace. For this reason pits should be built of waterproof construction and with a raised edge to prevent the entrance of surface water. Such a pit is shown in Fig. 3. The recommended minimum clearances are also shown in this figure.

The restricted vertical space is responsible for the fact that floor furnaces are designed to operate at much higher outlet temperatures than are common with gravity warm air systems installed in houses with basements. The vertical height of the air columns in a gravity warm air system, even in a one-story house from the grate level to the centerline of the register on the first floor is about 8 ft. The temperature of the air leaving the register of a gravity warm air system is usually about 200 F.

A comparison of the gravity warm air furnace and the floor furnace showing relative height of the air

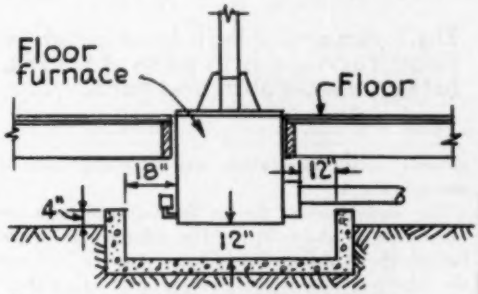


Fig.3 Section through floor furnace showing concrete pit to provide protection from flooding

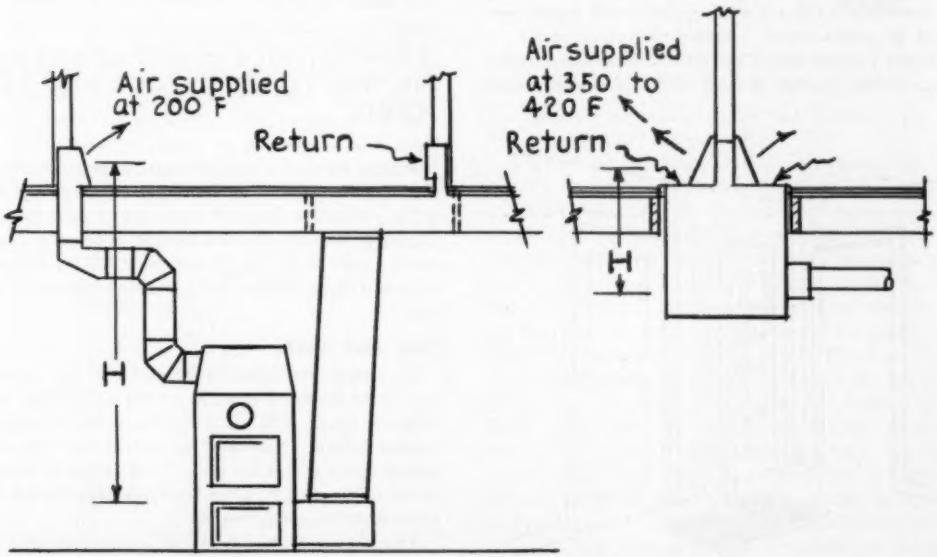


Fig.4 Comparative air circulating heads of typical gravity warm air and floor furnace installation.

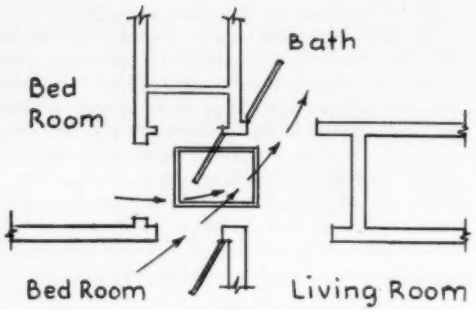


Fig. 5 Hazard of hall location where floor furnace is in path of traffic between bed room and bath.

columns, outlet temperatures and circulating heads is shown in Fig. 4.

The temperature of the air descending through the return duct is about 70 F. The difference in weight between the 8 ft descending column of air at 70 F and the corresponding 8 ft rising column at 200 F, is about 2 ounces. This is the circulating head that causes air movement through the system. If the height of the air columns were reduced to 2 ft the circulating head would be only one-half ounce and the furnace would have to be very large to produce a reasonable performance. The vertical height of the air columns in a floor furnace is about 2 ft so that a much higher outlet temperature must be used to move a reasonable volume of air.

Safety requirements of the Underwriters' Laboratories, Inc., for the approval of oil fired floor furnaces, restrict the outlet air temperature to 350 F, but even at this temperature the circulating head is only about 0.8 ounce. The approval requirements of the American Gas Association for gas fired floor furnaces permit even higher outlet temperatures, 420 F., but this increase only increases the circulating head to slightly less than 1 ounce.

Metal is Heated

The relatively high outlet air temperature causes the central or outlet section of the grille to be heated to uncomfortable temperatures. But the temperature is apt to be even higher due to the exposure of the central section of the grille to the upper surface of the combustion chamber. Heat is radiated from this surface, which may be as high as 1,000 F, to the metal grille raising its temperature even above the temperature of the air passing through it. It will be seen from Fig. 1 that the upper surface of the combustion chamber is fairly close to the under side of the floor grille and that this radiation effect is of considerable magnitude.

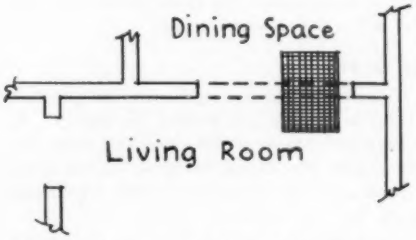


Fig. 7 Common location of floor furnace in arched opening between dining space and living room

Because of the high temperature of the outlet air and the high temperature of the center section of the floor grille a hazard is involved in the use of floor furnaces. Placed in the path of traffic between bedroom and bathroom, as shown in Fig. 5, there is a decided hazard to anyone walking between bedroom and bathroom in bare feet.

Door May Ignite

It is especially hazardous to children who, on their way to the bathroom at night, are not apt to be as wide-awake as adults. The location shown in Fig. 5 illustrates another hazard. Note that the door of the linen closet swings outward over the grille. Left in this position as shown in Fig. 6, it is exposed to temperatures which may ignite it and start a serious fire.

There is a secondary hazard in locating the floor furnace close to a linen closet because of the danger of combustible material stored in the closet accidentally falling off the closet shelves onto the hot floor furnace grille.

A location quite common for a floor furnace installation is in a framed opening between living room and din-

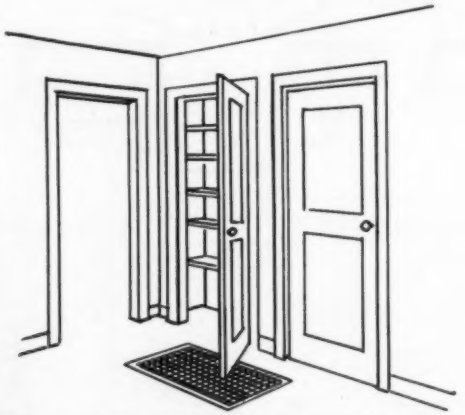


Fig. 6 Hazard of hall location of floor furnace where linen closet door can swing over hot floor furnace register.

ing room as shown in Fig. 7. This is not a good location because of the danger of a small child crawling onto the hot surface. There is also a hazard due to the propensity to decorate the opening with curtains or drapes as shown in Fig. 8.

Manual Recommendation

Installation manuals of many floor furnace manufacturers, apparently giving little consideration to the hazard involved, recommend both the hall location and the between-room location for the flat register floor furnace with the idea that warm air is better distributed in these locations than if the floor furnace is located in the living room itself.

When the furnace is located in the hall, the circulation of air is largely within the hall itself, the walls of the hall acting as a casing with the doors corresponding to outlets from that casing. The fact that the return area of the furnace grille is within the same small hall space as the supply outlet section tends to cause a recirculation of air within the hall space itself so that the furnace will shut off on the high limit control sooner than it would if it were located in a larger space where air is returned at a lower temperature.

Comfort Where?

While it is probably true that bedroom heating is better with the hall location than it is with the furnace located in the living room, it is also equally true that living room comfort is not as good with the hall location as it is with the floor furnace located in the living room itself. The question which this point raises is: Is it not better to do a reasonably good job of heating the living room at the sacrifice of full comfort in other rooms than to do an inadequate job of heating all rooms? It should be borne in mind that the floor furnace cannot be expected to produce the same quality of performance as a more complete heating system. Its performance is improved by locations which are fairly central but central location does not necessarily imply hall location. Fig. 9 shows a typical hall arrangement.

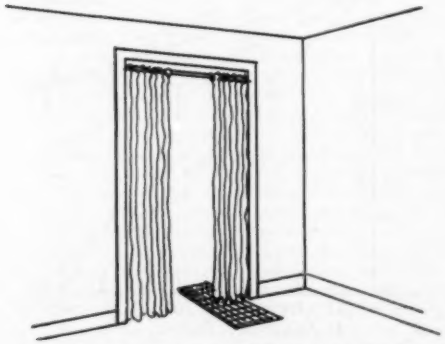


Fig. 8 Hazard of floor furnace location in framed opening between dining and living spaces.

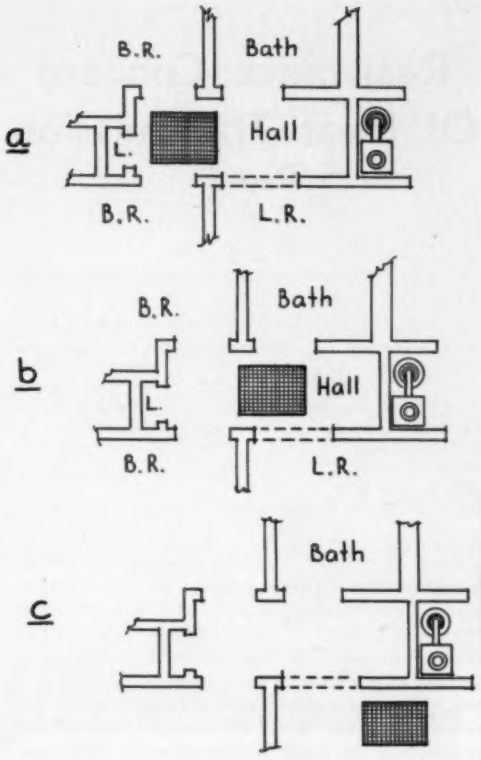


Fig. 9 Successive improvement in floor furnace location to reduce hazard

It is doubtful if location in a hall, as shown in Fig. 9-a and 9-b, should be used, not only for the reasons given above, but because of the likelihood of raising the temperature of the construction surrounding the hall to hazardous levels. When the doors to the bedrooms and bath are closed and a curtain is hung across the framed opening between living room and hall, air heated by the floor furnace merely recirculates in the small hall itself. It has already been shown that the temperature of air delivered by the floor furnace is of the order of 350 to 400 F, so that the hazard from overheating wood doors, combustible door frames and the hall partition framing is apparent. A floor furnace should, therefore, never be located in a small space such as a hall that is likely to be closed off. Fig. 9-c shows the same plan as Fig. 9-a and 9-b with the furnace located in the living room. In this position close to the entrance to the hall, air circulation of warm air through the framed opening into the hall and from the hall into bedrooms and bath will be reasonably good. The furnace is removed from the line of barefoot traffic. The remaining hazard is to small children playing on the floor.

Resistance Concept Of Heat Transmission
Part VI

S. KONZO
Professor of Mechanical Engineering
University of Illinois

In a previous issue the following equations were given for determining the temperature of the inside surface of the glass, when both the resistance of the inner film and the total thermal resistance to heat flow across the window were known:

$$\text{Temperature drop from inside air to inside surface of glass and} = \frac{\text{Resistance of inner film}}{\text{Total resistance}} = \text{Total Difference in Temperature} \quad (13)$$

$$\text{Temperature of inside surface of glass} = \text{Room air temp.} - \text{Temperature drop from indoor air to inside surface} \quad (14)$$

Examples were also given for surface temperatures of a single thickness of glass, together with maximum allowable relative humidity without obtaining condensation. For this purpose a reference temperature of 70 F, a relative humidity of 40 per cent, and a dew-point temperature of 44.6 F was used as a criterion for determining the outdoor air temperature that would result in condensation. It was shown that raising indoor air temperature was not nearly as effective as air motion over the inside surface of the glass in preventing fogging of the windows.

In this issue the discussion will include the surface temperatures of storm sash, glass blocks, and permanent windows of the double pane type.

As explained previously it is possible by means of equations (13) and (14) to determine the expected surface temperatures of windows protected by storm sash. The ASHVE *Guide* gives the total resistance of storm sash plus inner glass as equal to about 2.22 resistance units, for an air space greater than ¾ in. between the two glass surfaces. The inner film resistance can be considered to be 0.67 units as in the previous examples. These two resistance values are all that are required to make the analysis shown in Fig. 23a and 23b. The curve labelled *ab* in Fig. 23c indicates the expected surface temperature of the inside glass surface for a wide range of outdoor air temperatures. The horizontal arrow, indicating the dew-point temperature of 44.6 F, indicates the conditions at which condensation will begin to form when an indoor relative humidity of 40 per cent is maintained. In the case of curve *ab* moisture will form on the inner glass surface only for outdoor air temperatures colder than about —14 F. These results apply

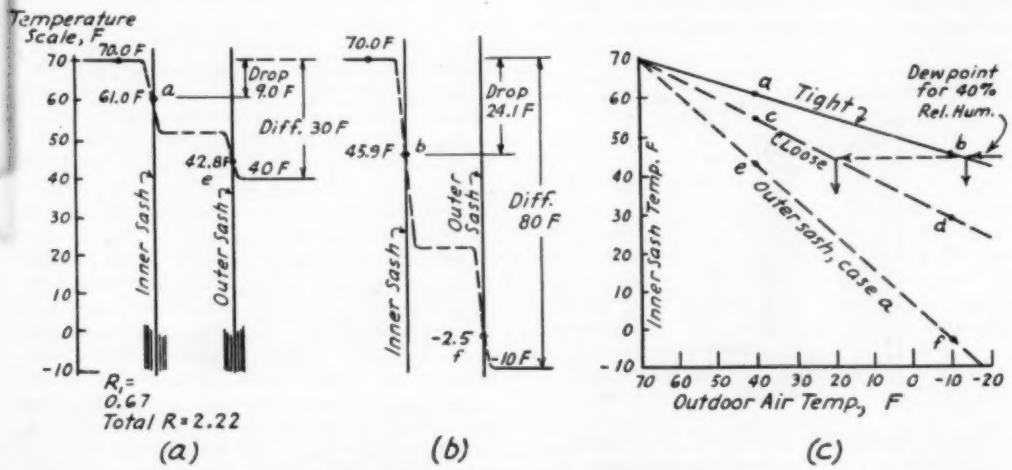
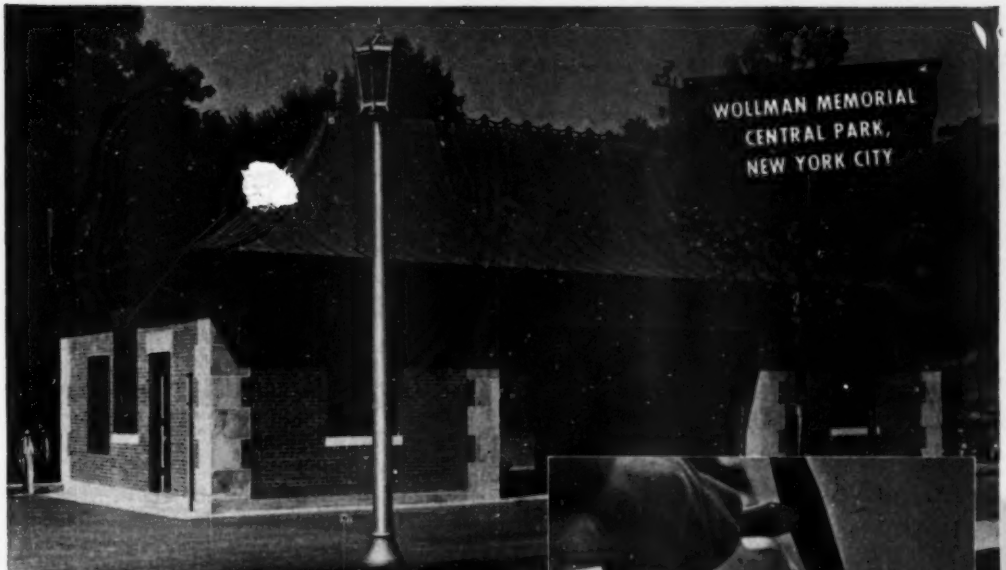


Fig. 23 Inner surface temperature of storm sash. (Tightly fitted and loose fitted cases shown).



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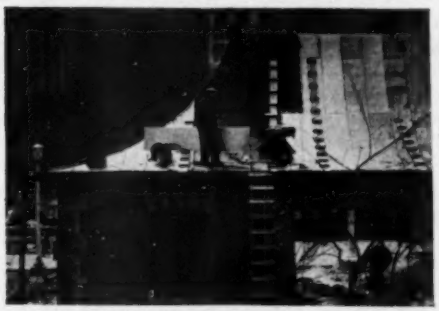

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only to tightly fitting storm sash.

In the case of storm sash which are not tightly fitted, total resistance will be less than 2.22 units depending upon the extent to which the storm sash have become warped or poorly fitted. Precise resistance values for such windows are not available. However, Manual 3 of the National Warm Air Heating and Air Conditioning Association gives a resistance value of 1.33 units for "storm sash put up and taken down annually" and which "will probably be loose fitting." The curve labelled *cd* in Fig. 23c shows the inside glass surface temperatures under this assumption. In other words, if curve *ab* in Fig. 23c represents the best that can be obtained and curve *cd* is for poorly fitted storm sash, the range of application can be considered to lie between these two curves. In any case, even a poorly fitted storm sash will provide warmer surface temperatures of the inner glass than will a single pane window, the results of which were shown in Fig. 18 and 19.

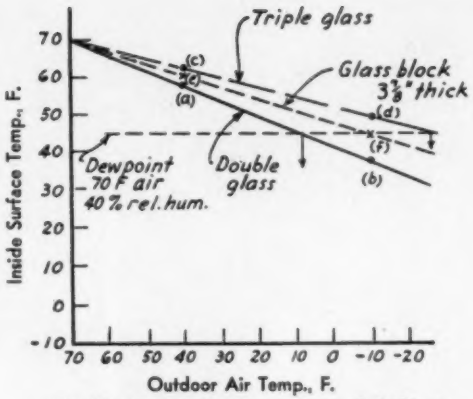

Fig. 24 Inner surface temperatures of double-sash, triple-sash, and glass block construction.

Moisture Inside Storm Sash

Occasionally complaints are received of moisture condensing on the inside surface of the storm sash, even with tightly fitted storm sash in place. In this case, water vapor is leaking past the inside window frame and condensing on the coldest surface available. Such condensation rarely occurs if the inside windows are weather-stripped or are tightly fitted. The reason for the condensation becomes apparent from a study of curve *ef* in Fig. 23c. Let us assume the case of a tightly fitted storm sash, as was the case in Fig. 23a and 23b. The temperature of the glass on the inner window will be 61.0 F when the outdoor air temperature is 40 F, and will be 45.9 F for an outdoor air temperature of —10 F. We shall neglect the small temperature drop through the glass itself. We are interested in determining the temperature drop across the air space, so that we can obtain the temperatures at points *e* and *f*. The resistance of the air space can be considered the same as that of two air film resistances, each of 0.67 units. The surface temperatures of points *e* and *f* will then be 42.8 F and —2.5 F, respectively. These temperatures are even lower than the inside surface temperatures of a single thickness of glass shown in Fig. 19. In other words, the inside surface of the storm sash will become fogged under slightly warmer outdoor temperature conditions than those for a single window, provided that water vapor can reach the inner space between the storm sash and the inside window. Obviously, the solution is to lock the inner windows tightly or to weatherstrip the inside sash. If neither solution eliminates condensation, the only recourse is to reduce the vapor content of the air trapped between storm and inner sash. This can be accomplished by providing small weep-holes in the storm sash which will permit outdoor air to leak into the air space. Any ventilation of the air space with outdoor air will tend to reduce the effectiveness of the storm sash as a thermal barrier.

The use of permanent and tight air spaces, such as are provided by thermopane, twindows, or glass blocks will also be effective in raising the temperature of the inner surface of the glass. Total resistance for fixed, double windows, of the type sold under the trade names of thermopane and twindow, varies somewhat depending upon the thickness of the glass and the thickness of the air space provided. For example, the manufacturer's catalogues list a range of resistances from 1.54 units to 1.725 units for double sash. For the purpose of this analysis an average value of 1.65 units for double sash and 2.5 units for triple sash were selected. In the case of glass blocks, which are 3⅞ in. thick, the range of resistance values is from 2.04 units to 2.17 units, with an average of about 2.1 units.

Range of Cases

In Fig. 24 are shown the glass surface temperatures for a wide range of outdoor air temperatures for the following cases:

Curve *ab*—double glass of permanent type,

Curve *cd*—triple glass of permanent type,

Curve *ef*—glass block, 3⅞ in. thick.

In addition the dew-point temperature of 44.6 F is shown as a horizontal line, corresponding to 70 F air temperature and 40 per cent relative humidity. The intersection of the dew-point line with the curve *ab* indicates that condensation can be expected when the outdoor air temperature is colder than about 7 F. Since the dewpoint temperature of 70 F air and 30 per cent relative humidity is 37.2 F, this window will be satisfactory for outdoor air temperatures as low as —10 F when the relative humidity is of the order of 30 per cent.

Relative Humidities in Homes

From the curves of temperatures of the inner glass surface shown in: Fig. 19 for single glass,

Fig. 23 for storm sash, and

Fig. 24 for double glass, triple glass, and glass blocks, the summary in Table 8 can be made:

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Table 8. Outdoor Temperature at Which Condensation can be Expected.

With:	For an indoor air temperature of 70 F and indoor relative humidities of:		
	40 per cent	30 per cent	25 per cent
	the outdoor air temperature at which condensation can be expected will be about:		
Single glass	36 F	26 F	20 F
Storm sash, tight	—13 F	below —30 F	below —30 F
Storm sash, loose	19 F	4 F	—4 F
Double glass, narrow space	7 F	—11 F	—22 F
Triple glass, narrow space	—25 F	below —30 F	below —30 F
Glass block (3⅞ in.)	—10 F	below —30 F	below —30 F

Some general observations can be made in connection with this tabulation of data. Assuming that condensation on glass surfaces is not desirable, the use of single glass will not permit relative humidities of even 25 per cent to be maintained in any climate where the outdoor temperature falls below about 20 F. In fact, it is futile to consider any reasonable relative humidity unless the windows are adequately protected by tightly fitting storm sash or equivalent.

Space does not permit a complete discussion of the present status of the desirable indoor relative humidity, but a short digression is necessary since the subject is not as simple as the previous discussion might indicate. In the first place, neither the relative humidity nor the absolute humidity (moisture content) of the outdoor air remains constant for any period of time. In general, the outdoor relative humidity is large in magnitude and will be greatly affected by the outdoor air temperature. For a climate such as in Urbana, Illinois the average values for the outdoor relative humidity will be about as follows:

Table 9. — Outdoor Relative Humidities in Urbana, Illinois

For an outdoor air temperature of	The outdoor relative humidity will be about
70 F	63 per cent
50 F	72
30 F	81
10 F	89
—10 F	96

(Data from Bulletin 230)

Considerable deviations can be expected from these values even in Urbana, depending upon wind direction and precipitation. It is probable that localities which are drier than Urbana will show lower average values of the outdoor relative humidity. In any case, contrary to the impressions of the casual observer, the magnitude of the outdoor relative humidity increases as the outdoor air temperature decreases.

However, the specific humidity, or the moisture content, of the outdoor air shows a reverse trend. That is, as the weather gets colder the outdoor air shows a smaller absolute humidity. This is illustrated by curve *A* in Fig. 25, which shows the relative humidity that would be obtained indoors if the absolute humidities for the indoor air and outdoor air were considered equal, and the outdoor air were heated to the indoor temperature without the addition or removal of any moisture. This theoretical curve is not a horizontal line, indicating that relative humidity would not remain constant for all weather conditions.

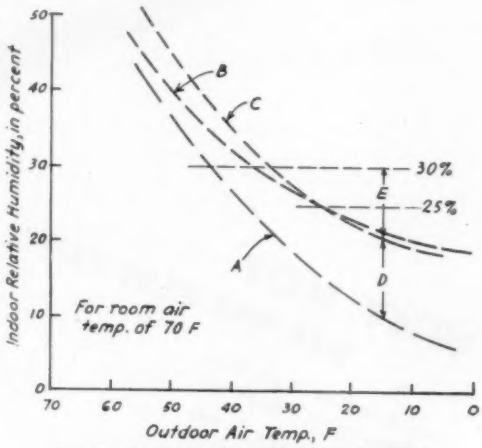

Fig. 25 Theoretical and actual relative humidities observed in research residences. (Data from University of Illinois Eng. Exp. Sta. Bul. 230 and 349).

A comparison of theoretical curve *A* with actual results would be of interest. Such measurements of indoor relative humidity have been made in two of the research residences at the University of Illinois. Curve *B* in Fig. 25 is an average curve reproduced from Bulletin 230 (p. 17) and curve *C* from Bulletin 349 (p. 62) of the engineering experiment station. In both cases the houses were well constructed and reasonably tight, so that infiltration of outdoor air could be regarded as relatively small. Furthermore, no cooking or laundering

(*Please turn to page* 130)

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Any uncertainty about the availability of gas for house heating is not a handicap to the Moncrief dealer. On the contrary, it is a help to the Moncrief dealer!

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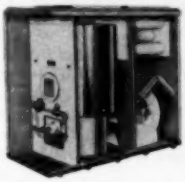
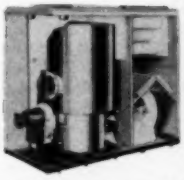


As an oil-fired unit. 64,600 to 180,000 B.T.U. at register



THE GRAVITY FURNACE

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As an Oil Unit

60,600 to 85,000 B.T.U. at register

THE UTILITY A.C. UNIT

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THE COUNTERFLOW UNIT

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HEATING AND AIR CONDITIONING UNITS — MONCRIEF — FURNACE PIPE AND FITTINGS

Current Control Picture

M-88. Order designed to assist distributors and warehouses in replacing their stocks of aluminum. Distributors are authorized to order in each month the same quantity of each form and shape of aluminum which they delivered during the preceding month. The order became effective Nov. 1, 1951.

M-1. Amendment of direction 3 permits steel companies to sell 100 per cent of their output on a pick-and-choose basis, in all but the last 15 days of lead times. If their order books are not filled by the last 15 days, they must accept in those 15 days all authorized controlled materials orders offered them until their order books are full.

M-11. Amendment of direction 2 allows copper producers to sell 100 per cent of their output on a pick-and-choose basis in all but the last 15 days of lead times. If their order books are not filled by the last 15 days, they must accept in those 15 days all authorized controlled materials orders offered them until their order books are full. Notice of acceptance or rejection of orders must be given promptly. Order books for a calendar quarter must be opened not later than 90 days prior the first day of the quarter.

NPA ORDERS

M-1. Set-asides of iron and steel castings for rated orders. Monthly set-asides of steel castings range from 75 to 80 per cent of the average shipments in the first eight months of 1950. Galvanized sheets are included in the list of products limited and 80 per cent of production is reserved for rated orders. Lead times vary but 45 days is set in most products.

M-4A—NPA order M-4 was revoked and replaced by M-4A. The new order provides that no person may commence any construction that requires more than two tons of carbon steel, 200 pounds of copper, and any quantity of aluminum, alloy steel, or stainless steel without authorization and allotment of materials. CMP Reg. 6 was amended to halt or prohibit construction on projects that have not been given an authorized construction schedule and related allotment of controlled materials. Dir. 1 to CMP Reg. 6 was issued Aug. 3 and establishes procedure whereby persons may place authorized controlled materials orders and defense-rated orders for construction materials where total requirements do not exceed specified quantities. NPA Del. 14 and NPA order M-74 were amended and NPA Del. 7 was revoked to make them conform with the new construction regulations. Amendment of M-74 adds six items to the list for which use of copper is restricted and revoking of Del. 7 returns processing of construction applications from Commerce Department field offices to Washington.

M-6. Steel distributors. To assure flow of carbon steel products to warehouses steel producers are required to allot and ship each month not less than 85 per cent of a warehouse's base tonnage, including DO orders. Base period for warehouses is Jan. 1 to Sept. 1, 1950.

M-6A. Requires steel producers to ship a minimum of 100 per cent of average monthly base period tonnages to warehouse distributors on and after Jan. 1, 1952. Base period is the first nine months of 1950. Required monthly shipment of each steel product now going to warehouses is 85 per cent of average monthly base period shipments. M-6A will supersede M-6 on Jan. 1, 1952, when M-6 will be revoked.

M-8. Tin. Allows use of pig tin to 90 per cent of average monthly use in first 6 months of 1950 for manufacture of tin plate and terne plate. Inventory restricted to 45 days for most tin products.

M-14. Nickel. Prohibits use of nickel-bearing stainless steel and high nickel alloys for all sheet metal building applications.

M-15. Zinc. Restricts use of zinc and zinc products to 80 per cent of average use during base period of first 6 months of 1950.

M-24. Tin plate and terne plate. Limits the maximum permitted coating of tin and terne plate. Some applications restricted.

Dir. 3 to M-1—This order provides that a steel producer can choose orders he wants, up to 15 days before expiration of lead times. In the remaining 15 days he must take in the order in which they are received all of the authorized controlled materials orders he can fill. Orders accepted before the 15th day prior to end of lead times must not exceed 90 per cent of the steel producer's monthly capacity.

Dir. 4 to M-1—Provides for a transition to a full CMP in the fourth quarter of 1951. It reserves the former free area steel products for makers of consumer durable goods and passenger automobiles and holders of unrated orders which have been converted to authorized controlled materials orders.

M-47B. Order permits flexibility in the use of steel copper, and aluminum for output of consumer durable goods. It allows a manufacturer of products listed in the order to shift his production for any calendar quarter from one product to another in the same group. Controls end-use of the materials listed.

M-47A. An end-product producer's maximum use of steel, copper, and aluminum will be specified either by his CMP allotment, or if he does not receive an allotment, by the classification of his product under M-47A, except for copper used in building materials, which will be handled separately.

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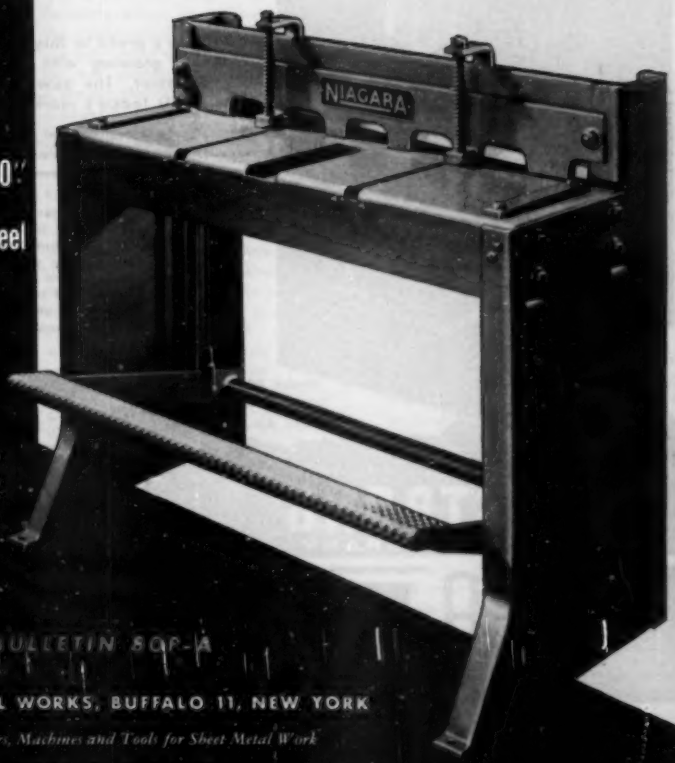

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Unusually quiet operation makes this heating plant ideal for installation in a closet or utility room surrounded by living quarters. Compactly built; built-in filter rack; two-tone blue baked enamel finish. Easily installed.

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Provisions include:

1. Copper and aluminum end-use limitations are added to existing steel limitations in M-47A,
2. Products on M-47A's list are allowed consumption of 70 per cent of steel, 60 per cent of copper, and 50 per cent of aluminum, figured on January-June 1950 base period.
3. Establishment of a new list B in which consumption of steel, copper, and aluminum is set at 85, 80, and 75 per cent respectively, of permitted use during the first quarter of 1951.
4. Relaxation of prohibitions on nonoperational use of copper and aluminum in items covered by M-47A, and,
5. Transfer of the point of control of copper and aluminum from the fabricator to the firm which produces or assembles the end-product.

Steel use percentage calculations will be made upon the amount of steel used by the manufacturer in making products during this base period within an item classification of list A and B. Copper and aluminum percentages continue to be based upon a company's use of copper or aluminum for making all products in the base period.

CPR 34

This regulation requires the service establishment to file with the local OPS office the schedule of its charges for services performed. The ceiling price is the highest charge made during the base period of December 19, 1950 to January 25, 1951. This ceiling price list should be posted where the public can inspect it.

Application of this regulation to the warm air heating and sheet metal contracting industry is principally in regard to hourly charges for labor in the service branch of the business. Any established services such as filter replacement or oil burner service are controlled by this regulation.

CMP REGULATIONS

Regulation 1—sets up the basic rules of operation for the Controlled Materials Plan. It explains how steel, copper, and aluminum will be allotted to manufacturers of defense and defense-supporting industries.

Regulation 2—establishes inventory limitations on controlled materials. Carbon steel, alloy steel, and stainless steel are limited to a 45 day inventory. Copper, copper-base alloys and aluminum are limited to a 60 day inventory.

Regulation 3—establishes the relative preference status of delivery orders for controlled and other materials needed for production of goods deemed essential to the re-armament program and the general economy.

Regulation 4—describes the rules under which distributors may make deliveries under CMP.

Amend. 2 to CMP Reg. 1—To eliminate improper scheduling methods the NPA amended CMP Reg. 1 to make it clear that a mill may not accept an authorized controlled materials order if it cannot be filled during the calendar quarter for which it is valid, unless it is revalidated for a subsequent quarter.

Reg. 1 states that a controlled materials producer who is not required or is unable to accept an order for delivery in the month specified by his customer, but has open space on his schedules during the next two months, must accept the order and fill it as soon as possible if this is satisfactory to the customer.

The amendment emphasizes that if this would mean delaying delivery (from the third quarter to the fourth quarter, for example) the order may be accepted only if the customer certifies that he holds an allotment valid for the fourth quarter. In such case the customer must charge the delivery to his fourth quarter allotment.

Dir. 1 to CMP Reg. 1—gives manufacturers whose operations fall under the Controlled Materials Plan but who use only small quantities of steel, copper, and aluminum in their production a simple method of obtaining needed supplies of those three materials, without applying to the government. Direction 1, states that a producer of a class B product not marked with an asterisk in the Official CMP Class B Product List need not apply to NPA for controlled material if his quarterly requirements for its manufacture, and the manufacture of all other items in the same product class, do not exceed the following amounts of any of these materials: Carbon steel (including wrought iron), 5 tons; alloy steel (except stainless steel), 0.5 ton; stainless steel, none; copper and copper-base alloy brass mill products, copper wire mill products, copper and copper-base alloy foundry products and powder, 500 pounds; and aluminum, 500 pounds. Direction 1 authorizes him to use the allotment symbol SU (smaller user) on delivery orders for controlled material within the limits set. The quantity of B products he can turn out with the material so obtained, plus that in his inventory, will constitute his authorized production schedule. A producer who qualifies for this procedure is also authorized by the direction to apply the rating DO-SU to orders for production materials, other than steel, copper, and aluminum, required to complete his schedule.

Dir. 2 to CMP Reg. 1—Authorizes producers of controlled materials to apply the rating of DO-PM to orders for production materials (other than steel, copper, and aluminum) for use in producing controlled materials.

Dir. 3 to CMP Reg. 1—No manufacturer whose quarterly allotment or advance allotment of carbon steel is equal to or more than a carload lot shall be required to reduce his delivery order for such material below a carload lot. He may order the full carload despite the fact that the amount may exceed the total permitted in one month under Dir. 3. This direction also prohibits any manufacturer from ordering for delivery in one month more than 35 per cent of his total quarterly allotment of any controlled material.

Dir. 4 to CMP Reg. 1—Metal fabricators who acquire title to foreign-produced steel before it arrives in the United States may use it to augment their authorized production schedules under CMP. The new direction stipulates that no copper or aluminum controlled materials above a manufacturer's allotment of these metals may be used in connection with an augmented production schedule.

Dir. 5 to CMP Reg. 1—Stipulates that if a purchaser, through no fault of his own, did not receive the full amount of controlled materials originally ordered for third quarter delivery, this undelivered amount shall not be deducted from his fourth quarter allotment. If a purchaser placed an order in the third quarter for delivery in the fourth quarter, he must deduct the amount of such materials from his fourth quarter allotment regardless whether they were obtained by an authorized CMP order, a rated order, or an unrated order.

CMP Reg. 5 replaces NPA Reg. 4 and provides for the acquisition of maintenance, repair, and operating supplies under the controlled materials plan. CMP Reg. 7 does the same for parts and materials needed by repair-shops. Both of the new regulations provide self-allotment procedures to obtain materials. No application to NPA is required.

Under CMP Reg. 5 any business enterprise may obtain the normal amounts of steel, copper, aluminum, and other materials needed to keep its plants and property in repair and operation, and to make minor capital additions. The allotment symbol DO is authorized as well as the symbol DO-MRO.

Fundamentals Of Sheet Metal Practice

PART X

CHARLES SEEL

Alexandria, Va.

WE have seen mechanics take a 6 ft section of round or square pipe (the square having a corner seam) and after punching ⅛ in. holes on the inside lap and 5/32 in. holes in the outside lap, 7/64 in. rivets were inserted in all the holes in the inner lap, drawn up tight with the set, and tapped lightly to produce a very small head. The outer edge was then placed with the holes over all the rivets which were then completed one at a time at the end of the bar in the sequence noted in a previous issue.

The burrs on the rivet holes should always be uppermost when riveting. This means that the holes should be punched on the inside of the work. Never rivet against the burrs. Remove them by dressing the seam flat on the stake with a mallet or hammer or counter drilling.

Cutting Rivet Out

Sometimes it becomes necessary to cut a rivet out. This is quickly done by placing the work on a stake, taking a sharp chisel and hammer and cutting the head off in a series of cuts around the shank of the rivet. After this step a nut is placed under the rivet and the rivet punched out with a hammer and solid punch. This applies to either the flat head of the rivet or the button head. This is better than the method of cutting a rivet head off at an angle, which generally leaves an oversize hole in the metal.

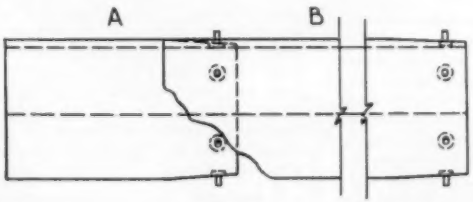


Fig. 86

When fabricating round pipe in a number of sections, rivets may be inserted in the small ends and tapped lightly to produce a small head so they will not fall out. The end is then depressed a little at each rivet, after which the section is placed on the riveting bar with the small end forward, and a pipe length from the end *A*. Fig. 86.

The large end of section *B* is then placed with the long seams meeting and in a slanting position so that the seam rivet is directly under the hole in *B*. This rivet is drawn up with a large set and completed. The balance of the small end is slipped into the large end and the rivet diametrically opposite is completed. Next a rivet half way around the pipe and so on.

This method works nicely even up to 16 in. pipe on round work and does away with the trouble of sighting the rivets through the holes. It even eliminates the need for a rivet stick.

Where the pipes are large enough to allow the helper to stand inside, one section is placed on the floor, the helper climbs in and the next section is lifted over his head. The seam is started by slipping a punch in two holes that match and going around the seam to slip the large end over the small. (There are no rivets placed in the small end in this case.) The seam is secured with three or four metal screws or rivets and the helper backs up the rivets from the inside of the pipe.

Some shops punch all the holes in the small end and only four in the large end for the screws. The rivets may easily be drawn through the one thickness as already explained. Where the small end has a burr which prevents ready assembly it may be shrunk slightly by dressing the edge in with a hand dolly and a mallet.

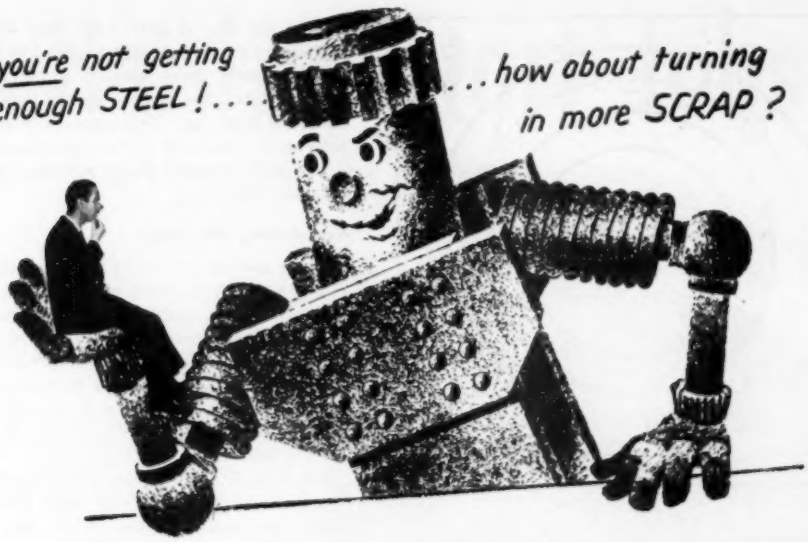
When the third and fourth length of pipe is placed in position it may be assembled on the floor and the helper can lie inside and buck the rivets from that position.

Where the work is flat oval the rivets may also be inserted in the small end before hand. In square or rectangular sections the use of the rivet stick is recommended, especially for small sizes.

There are many occasions where the cross seams on round and flat oval work are made by means of flanges. In order to produce these flanges they must be cut to proper size and the riveting lap streatched out.

These flanges may be made in several ways, three of which are treated here.

One method is to cut the proper sized hole (generally



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UNITED STATES STEEL

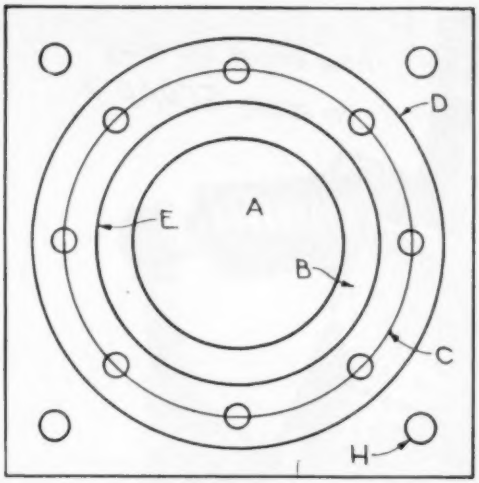

Fig. 87

in a nibbling machine) in a square or rectangular piece of metal of 16 or 14 gauge for round or oval pipe. Fig. 87. The flange at *B* is made about 3/4 or 7/8 in. Member *C* is from 1 to 1 1/4 in. in the center of which are the holes for joining the two flanges together. The circle at *D* is the line on which the flange is sheared, after lap *B* is knocked over. Four holes at *H* are placed on the diagonals to match the bolts on the jig used to make the flange.

Allowances

The line at *E* represents a circle of a size equal to the outside diameter of the pipe plus two thicknesses of metal. For 8 in. pipe, 16 gauge metal, this would be 8 1/8 in. plus 2 times 1/16 in. or 8 1/4 in. diameter. This flange is then secured between two plates having the center hole cut to conform to the desired size, (in this case 8 1/4 in.) and having four bolts to pass through the holes at *H*, which are screwed tight to hold the flange in place. Fig. 88 shows a flange jig made from 1/4 in. plate.

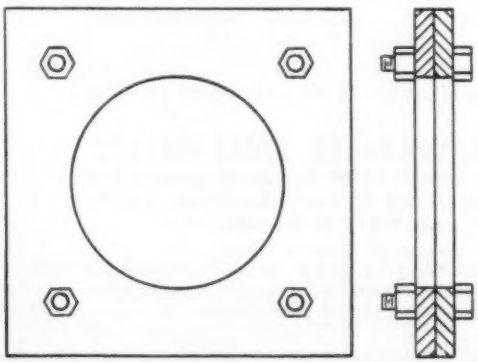

Fig. 88

After the edge of hole *A* has been filed smooth, removing the burrs, the flange is placed in the jig between the two plates, bolts inserted in the four holes and fastened tight. See that the scribed line at *E* is toward the inside of the jig. This is necessary in order that the outer scribed line at *D* will be uppermost when the flange is sheared. Fig. 89 shows a flange jig with flange, clamped in the vise.

Hammering the Edge

Before starting to hammer the flange edge over, scribe a line with a lead pencil at *x*, about 1/8 in. above the edge of the hole in the jig and completely around the circle. Hammer part of the flange over using the ball end of the hammer and staying above the pencil line. Go around the circle, changing the position of the jig in the vise after each section of the circle is done. Then dress at point *x* around the circle, trying to avoid marring the fixture.

Knock the entire edge over, being careful not to pass 90 deg so that the flange may easily be removed. The edge is then dressed smooth on the stake and the outer line at *D* is cut in the throatless shear. The edges are filed smooth and holes punched for riveting the flanges to the duct.

After riveting, the edge is dressed out against the flange smoothly.

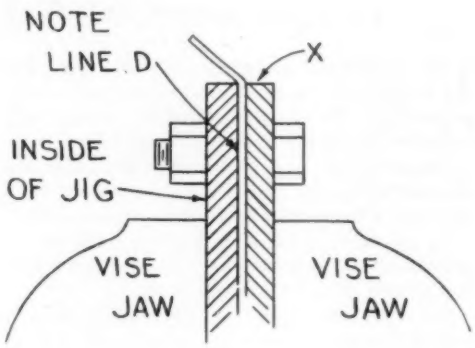

Fig. 89

Where the edge or web of a flange is not too high for the hammer used, a very good method to use in riveting is to work from the back and pound the rivets down. In this way better aim is possible and the danger of hitting the rivet a glancing blow is lessened. This method of striking a rivet is applicable to any similar piece of work such as a hinge, hasp, or any bent or straight angle. This also applies to flanges for square and rectangular ducts.

Another Type

A second type of jig used to hammer out a flange is made from a 12 or 18 in. section of square, 3 by 3 in. steel bar to which is welded or bolted a piece of 2 by 2 in. angle iron 1/4 in. thick. This angle is held away from the bar by an 1/8 in. spacer or shim, Fig. 90.

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For more than 47 years, Century Type RS motors have given satisfactory service throughout the world. They are available in sizes from ½ to 20 horsepower, in drip proof and splash proof frames.

In addition, Century builds electric motors in a wide range of types and kinds—in sizes from 1/6 to 400 horsepower for operation on single and polyphase and direct current. Specify Century motors for all your electric power requirements.

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Squirrel Cage Induction — 1/6 to 400 H.P.
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Synchronous Motors—20 to 250 H.P.

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DIRECT CURRENT MOTORS

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GENERATORS

AC, .63 to 250 KVA
DC, .75 to 200 KW

GEAR MOTORS

1/8 to 1-1/2 H.P.

MOTOR GENERATOR SETS

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DC to DC, DC to AC

Open Protected, Splash Proof, Totally Enclosed Fan Cooled, Explosion Proof.

Ball Bearing motors are factory lubricated for several years' normal service. Bearing housing construction permits easy re-lubrication when unusual service demands it.

Century C MOTORS

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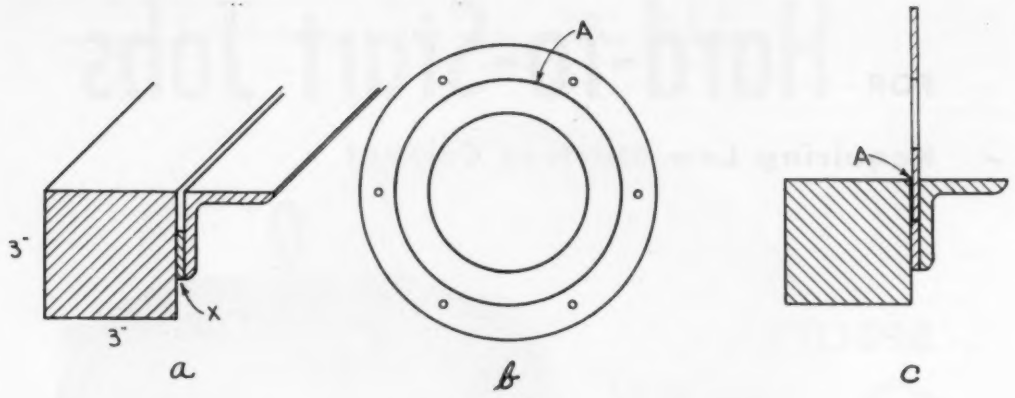

Fig. 90

The distance from the top of the bar to the top of spacer x is made equal to the width of the member or web of the flanges to be made. Where there are variations they are taken care of by means of narrow strips placed at the bottom of the slot. The flanges are cut out on a shear or nibbling machine and the line at a is brought to a position even with the top of the jig, using shims if necessary. Fig. 90b. The edge is then hammered over with a ball peen or stretching hammer while held in a vertical position. This type of jig may be used for many sizes of flanges. The preceding type of jig can only be used for one size of flange.

The punching and riveting is completed as previously described.

No Jig

A third method is that of not using any jig at all. The flange is generally left in a square or rectangular condition. The line at x is located at the edge of the anvil or stake and stretched out. After the web has been brought to 90 deg the flange is sheared at line y. The riveting is done as already noted. Some mechanics, after securing three or four rivets by first drilling through the pipe, will set a rivet under a hole in the flange by sighting it and draw it through the pipe by striking a sharp blow alongside the hole in the web of the flange. It will then be finished in the usual way.

While there are many types of rivets used, flat, oval, round, and countersunk, the method of riveting remains the same. Some years ago the heads of all rivets were soldered, but this practice has been discontinued because it became apparent that it was not required.

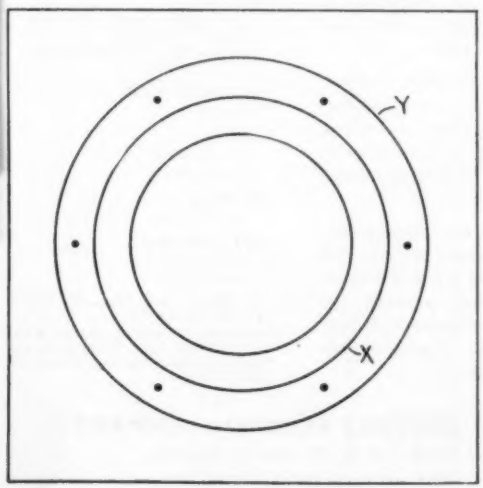

Fig. 91

Riveted Elbows

When elbows or S turns are made in square or rectangular pipe there are two methods of riveting which may be used. One method is to place the rivets on the flat or cheek sides, and the other to place them on the curved sides, that is the heel and throat. Of the two the first method is the most widely used and will be considered first.

As may be noted in Fig. 92, the riveting laps on the heel sections will be shrunk and those on the throat stretched. The holes for the rivets are laid out from the

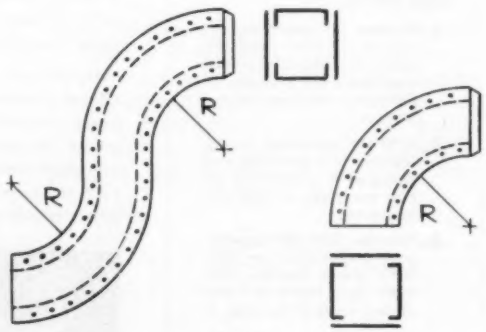

Fig. 92

New York PRIZE WINNING DEVELOPMENT SELECTS VAN-PACKER PACKAGED MASONRY CHIMMNEY

Hearth-Stone, the 500 home community development erected by Mi-Home, Inc. in Yonkers, New York, has won second place in a nationwide competition conducted by the National Association of Home Builders. One look at the skyline of this prize winning development tells you a Van-Packer Tile-lined Masonry Chimney is installed in each of the 500 homes.

Big construction enterprises like Mi-Home, Inc. know Van-Packer All-Fuel Chimneys save construction time; eliminate waiting time and clean-up; conserve space; lower costs and insure best heater performance. Underwriters' Laboratories tests have proved Van-Packer to be fire-safe under all conditions. Send the coupon for complete information about Van-Packer Packaged Masonry Chimneys.

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radius points at *R*, on the cheeks, and corresponding holes in the throat and heel sections from the points where the lines meet the corner edges. Since the riveting lap is generally ¾ in., the lines of the holes will be ⅜ in. from the edges or corners.

Lengths Specified

The lengths of the throat and heel sections are determined, as already noted, the edges for riveting added to each side (¾ in. and the holes laid out to conform to those in the cheeks. These edges are then bent to 90 deg in the brake. The throat section is placed on the anvil or stake and stretched out with the stretching hammer until the shape conforms to the throat section. Each side should be done a little at a time and stretched out alternately. Care should be taken not to make sharp edges on the flanges by striking too hard. When the shop has a power machine with squeezing rolls, the edges can be stretched out by running them through these rolls.

The section for the heel is shrunk to the desired radius by means of a tool similar to that used to depress the ends of leaders or ducts known as a corner crimper. Some mechanics take an old pair of pliers and shape the jaws to suit this purpose. The handles are then extended by means of sections of iron pipe. The riveting edge is inserted in these pliers at intervals and the edge crimped by squeezing the jaws together.

These crimps should be spaced at distances which will not interfere with the holes. This method is based on the condition that the gauge of metal used is light enough to permit the use of these tools.

The machine known as the cornice maker or close crimper may be used for this purpose, if the gauge is suitable.

Where the metal is too heavy for either of these methods, the use of a block of steel having a groove cut into it is very handy. Fig. 93. This groove is tapered to nothing at the edge *a*. The riveting edge is placed over this block, fastened in the vise, and the metal driven into the groove with a peen hammer. Should the radius be such that the vise will interfere, the block can be welded onto a bar and brought out farther in the vise. In this case care should also be taken to see that there is a convenient flat space at each rivet hole.

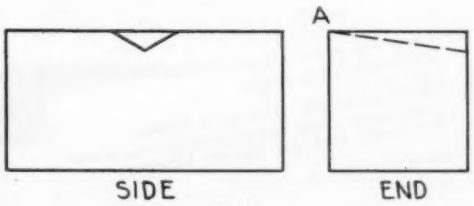

Fig. 93

Having shaped both throat and heel to the desired radius, the riveting is done in the usual manner. Both heel edges should be done first and the two throat edges last.

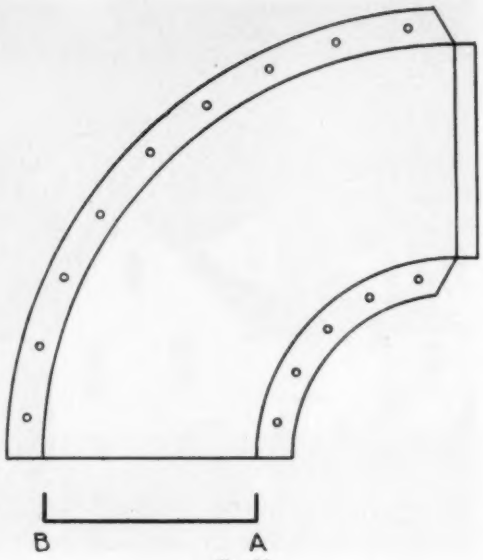

Fig. 94

The practice of making these crimps by opening the jaws of the vise slightly and driving the metal between them is very poor procedure.

In the case of an S offset the heel is shrunk and the throat stretched, in the proper order.

Where the second method is used the riveting laps are added to the cheek sides, the holes being laid out in a similar manner as described for rivets.

The lap at *A*, Fig. 94, for the throat is stretched and brought to 90 deg. The lap at *B* is worked by shrinking. The other cheek is made opposite the first. The heel and throat sections are then cut. After the necessary holes are laid out to match the cheeks, these are punched, the pieces rolled to the desired radius and riveted in the manner already noted. The two cheeks are riveted to the heel section first and the throat last. It will be necessary to have a suitably curved bar for this type of elbow, shaped to fit both heel and throat. A lap may be added to the flat sections to dress over the cheeks, if desired, but in most cases the corners are left flush.

1952 Predictions

THE NATION'S OUTPUT of goods and services (commonly known as gross national product) will reach a new high in 1952, in the opinion of a substantial majority of 128 economists polled by F. W. Dodge Corp. for an article in the November issue of *Architectural Record*.

A continuous rise throughout 1952 in total output of goods and services is expected by 94 economists, while 34 expect a declining trend during the latter part of next year. The average of all estimates indicates an annual output rate of $334.3 billions in the fourth quarter of this year, and $348.6 billions for the fourth quarter of 1952.

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. . . blends with every type of architecture. It never appears out of place—always looks *right.*

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Here's *another* profit-building addition to the famous Utility line: The new Utility 50 RD Recessed Dual Wall Heater! Highly competitive in price, it has all the built-in quality for which Utility is recognized...*plus* features not found in any other make! The new Utility 50 RD Recessed Dual Wall Heater installs faster, with greater ease and at extremely low cost. Lowest maintenance, too! Start pushing the new Utility 50 RD *now* and watch your profits roll in!

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THESE TERRIFIC ADVANTAGES MAKE *UTILITY'S* 50 RD EASIEST TO SELL:

1. Highly competitive price.

2. Circulates air at living level, eliminates cold floors and stagnant hot air at ceiling...because warm air is discharged where it's wanted.

3. Exterior is safe and cool to the touch because outer panel is Fiberglas-insulated with aluminum foil backing.

4. Available in models for natural, manufactured and liquefied petroleum gases.

5. Available with fully automatic thermostatic controls, plus 3-manual control for 100%, 50% and 30% of full rating of unit.

6. The Utility 50 RD Recessed Dual Wall Heater fits between standard 16" center studs.

7. 50,000 BTU Input, 35,000 BTU Output. Dimensions: Height, 60"; Outside Panel Width, 17".

8. A.G.A. approved *under new 1952 Requirements.*

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Cincinnati

NEW OFFICERS of the Cincinnati Sheet Metal Contractors Association, elected at an annual meeting on Nov. 13, are: President, Jack Schroeder, Charles Schroeder and Son; vice president, L. R. Bennett, B. and W. Metals Co.; secretary, John Hardebeck, Charles C. Grote Co., and treasurer, John Bareither, William Bareither Sons.

Ohio

THE OHIO SHEET METAL Contractors Association was successful recently in defeating a bill before the state legislature, which association officers believed would abolish safeguards in the awarding of contracts for state buildings.

The bill proposed to increase the limitation on separately awarded contracts for ventilating, heating, plumbing and electrical work on state buildings from $1,000 to $50,000. This would have placed subcontractors on most state construction under the supervision of general contractors, instead of under direct state supervision, as at present.

During Senate committee hearings on the bill, the limitation was cut to $5,000, which was considered reasonable because of increased materials and labor costs, but a House committee restored the $50,000 limitation. This was vigorously protested in telegrams sent by the association to all House members, resulting in the bill being defeated.

The state's sheet metal manufacturers and contractors, therefore, will continue as heretofore to bid directly on state contracts amounting to $1,000 or more.

Humidity Association Formed

FORMATION OF A NEW professional society to be known as the Humidifier Association has recently been announced by members of the executive committee.

The committee members, selected for their knowledge and experience in the warm air heating field, are all executives of companies actively engaged in research in winter air conditioning. They are: Marion Levy, Viking Air Conditioning Corp., Cleveland, Ohio; Arthur Evans, Skuttle Mfg. Co., Detroit, Mich.; Jack Carr, Maid-O'-Mist, Inc., Chicago, Ill., and J. W. Galloway, Automatic Humidifier Co., Cedar Falls, Iowa.

Efforts of the Humidifier Association, as outlined, are planned for three separate branches of activity.

1. Research: Directing and encouraging both engi-

COMING EVENTS — 1952

Jan. 20-24—National Association of Home Builders, 8th Annual Convention and Exposition. Stevens and Congress Hotels, Chicago, Illinois. Paul S. Van Auken, Convention-Exposition Director, 111 W. Jackson Blvd., Chicago.

Jan. 28-30—American Society of Heating and Ventilating Engineers, 58th Annual Meeting. Statler and Jefferson Hotels, St. Louis, Mo. A. V. Hutchinson, Secretary, 62 Worth St., New York, N.Y.

Jan. 31-Feb. 1-2—Sheet Metal and Roofing Contractors Association of Minnesota, Annual Convention. Nicollet Hotel, Minneapolis. Ray J. Kraus, Secretary, 508 S. 7th St., Minneapolis.

Feb. 7-8—Sheet Metal and Warm Air Heating Contractor's Association of Indiana, 34th Annual Convention, Hotel Severin, Indianapolis. Frank E. Anderson, Secretary, 439 S. 17th St., Terre Haute.

Feb. 11-13—Sheet Metal Contractors Association of Wisconsin, Inc., 37th Annual Convention, Hotel Schroeder, Milwaukee, Wis. Irv. F. Kanitz, Secretary, 225 E. Michigan St.

Feb. 11-13—New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, Annual Convention. Ten Eyck Hotel, Albany. Clarence Meyer, Secretary, 567 Genesee St., Buffalo, N. Y.

Mar. 27-29—Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, Annual Convention. Hotel Webster Hall, Pittsburgh. E. W. Liebermann, Secretary, Ambridge.

Apr. 14-18—20th National Oil Heat Exposition sponsored by Oil-Heat Institute, Commercial Museum, Philadelphia, Pa. R. H. L. Becker, Managing Director, 6 E. 39th St., New York, N.Y.

April 21-23—Sheet Metal Contractors Association of Illinois, Annual Convention. Abraham Lincoln Hotel and Exhibit at Elks Club, Springfield. E. A. Schmidt, 1210 E. Laurel St., Springfield.

Apr. 25-26—Michigan Sheet Metal, Roofing, Heating, and Air Conditioning Contractors Association, Annual Convention. Fort Shelby Hotel, Detroit. N. J. Biddle, Secretary, 3035 E. Grand Blvd., Detroit.

neering and medical research into the proper method and the effects of the addition of controlled humidity to parched winter air. Cited was the research completed by doctors at the University of Chicago. This project proved that a controlled atmosphere of 50 per cent relative humidity is lethal to germs that cause pneumonia, scarlet fever, sore throats and other ailments.

2. Training: Instruction to warm air heating dealers on the proper installation and sale of automatic furnace humidifiers.

"No warm air heating system is complete without controlled humidity," said the committee spokesman, "and only warm air heating affords this comfort." The installation of a humidifier assures customer satisfaction with a furnace job.

3. Education: A consumer publicity campaign is being conducted to inform the homeowner of fuel saving, structure preservation, and health benefits which can be enjoyed by the low-cost addition of an automatic furnace humidifier. Everyone involved in the development and sale of warm air heating equipment will follow, with interest, these efforts to give the homeowner greater service and satisfaction from his warm air equipment.

Inquiries and suggestions are solicited by the association whose address is: The Humidifier Association, 312 Ferguson Building, Cleveland 14, Ohio.

Apprenticeship Contest

THE 1952 NATIONAL CASH AWARD apprenticeship contest has been announced by its co-sponsors: the Sheet Metal Contractors' National Association and the Sheet Metal Workers' International Association. First prize in the competition is $200.00; second prize $125.00 and third prize $75.00. The contest opens on Feb. 1, 1952 and closes March 15, 1952. It is conducted by the National Joint Sheet Metal Workers Apprenticeship Committee.

This contest is open to first and second year apprentices. All apprentices who have not completed two years and not more than 4,000 hours of apprenticeship training before March 15, 1952 are eligible to enter contest.

All contestants are requested to make their entries through their local joint apprenticeship committee, by sending their name and address and the name and address of their employer to the local joint apprenticeship committee as soon as possible.

Each local joint apprenticeship committee should make their request to the secretary of the National Joint Apprenticeship Committee, Joseph J. Kaberlein, 5911 N. Mobile Ave., Chicago 30, Ill., as soon as possible, and obtain the number of questionnaires and drawings of the article that will be made by each contestant. Each local joint apprenticeship committee is requested to conduct a contest among their apprentices and mail the actual fitting made by the winning contestant to Secretary Kaberlein, postmarked not later than March 15th, 1952.

In localities where there is only one, or a small number of apprentices and there is no joint apprenticeship committee, the apprentices who are desirous of entering the contest may select one or more local contractors and an equal number of journeymen, preferably officers of the local union. These men will act as a committee for conducting the local contest and select their winning entry for the national contest.

In addition to cash awards, each winner will receive a medal and a significant certificate. Each local winner will receive a certificate of recognition.

The winners from the various localities will compete for the grand national prize awards. All fittings will be judged by their neatness, accuracy, and general workmanship. The decision of the judges will be final.

Plaque Award: To the joint apprenticeship committee who has distinguished itself as the committee having made the most progress in the promoting and training of apprentices during the year ending Dec. 31, 1951, will be awarded a plaque in recognition of a worthy and distinguished service to the sheet metal industry.

1952 *Indoor Comfort* Conferences

Jan. 8-9—Peoria, Ill.
Charles Raper, Meyer Furnace Co.

Jan. 17-18—Boston, Mass.
T. F. Donahue, Jr., Herrick Co.

Jan. 21-22—Newark, N. J.
Russell M. Cook, Thatcher Furnace Co., Garwood.

Jan. 24-25—Philadelphia, Pa.
John E. Phillips, Stelwagon Mfg. Co.

Jan. 28-29—Pittsburgh, Pa.
A. J. Luppino, Proie Bros., Inc.

Jan. 31-Feb. 1—Columbus, Ohio
Newt T. Hess, Vorys Bros., Inc.

Feb. 11-12—Des Moines, Iowa
Murray Goodman, Green Colonial Furnace Co.

Feb. 14-15—Salina, Kans.
Jim McKim, Salina Supply Co.

Feb. 18-19—Oklahoma City, Okla.
L. C. Binda, Federal Supply Co.

Feb. 21-22—Dallas, Texas
R. M. Burgess, Catlett Engineers

Feb. 25-26—Houston, Texas
D. M. Mills, F. J. Evans Engineering Co.

Feb. 29-Mar. 1—Little Rock, Ark.
J. L. Brown, Terminal Warehouse Bldg.

Other conferences will be scheduled for Birmingham, Ala.; Charlotte, N. C.; Denver, Colo.; Duluth, Minn.; and St. Louis, Mo. Dates for these conferences will be announced in later issues.

NASMD Discusses Controls And Metals

ON TUESDAY, OCT. 16, the National Association of Sheet Metal Distributors held its 41st annual meetng at the Marlborough-Blenheim Hotel, Atlantic City, N.J. President Ray P. Farrington called the opening session to order.

First speaker was A. G. Earnshaw, president, Earnshaw Sheet Metal Supply Co., Mansfield, Ohio. His topic was concerned with dealer and contractor education in sales, service, and credit. He brought out the following phase of the topic.

"I have found no ready answer to the problem of educating the dealer or contractor on sales and service without first paying some attention to personnel problems.

"Just look about you in your home territories and analyze how many young men are coming into our business (dealer level). There aren't too many.

"Does it not seem logical to you, as it does to me, that to do an adequate training job in our field we first need people in the business who want to be there, who have chosen it as a life work? Many young men who have entered our field have done so by accident or happenstance. There are a few, but only a few, who have actually selected this business deliverately."

Price Or Quality?

A. M. Vorys, president, Vorys Brothers, Inc., Columbus, Ohio spoke on national and private brands and said:

"Price and appropriate quality, considering at all times continuity of supply, should be given most attention by a distributor leaving brands as a secondary consideration, except as good brands often do have the right price and quality. Continuity of supply and right price have been the most important considerations for purchasers of steel, for all or a part of every year in the memory of anyone in this room except 1913, 1921, 1930, 1931, 1932 and 1938. Think of it in the last 38 years, only 6 whole years were steel buyers markets. These figures were not my own, but one of our sharpest buying customers. The occasion was when he ordered a car of sheets from us in the short steel buyers market of March and April 1950. When I told him, he could buy from the mill as cheap as we could, he asked me to handle his carload steel business on a commission basis, as he had never found a mill who would be his loyal source of supply, except in the six years mentioned when he needed no steel.

W. J. Busser, Jr., Busser Supply Co., Lewisburg, Pa., talked about regulations and their effect on the wholesale distributor.

"Let us just think that we have a big job ahead of us. We have a duty that is vital in assisting the defense program and let us try to understand government requirements, be patient with the rules and regulations, so that our defense program can be completed on schedule. I appreciate the difficulties of regulations and I, like every other citizen am annoyed with the many sudden changes and new controls. But, as citizens of our country, we have a tremendous job of building in a short period of time a program of defense and diversification of our many industries with many thousands of tools and products. It can be easily understood that there can be confusion in the forming of controls and regulations."

Metal Supply Outlook

William S. Story, associate editor, *American Metal Market*, discussed the future supply picture for steel, aluminum, and copper. After indicating possible improvement in steel and aluminum, with little relief in sight for copper, he said:

"On going back over what I have said, the doleful predictions of shortage stand out starkly. We are looking at the supply picture for these three metals at a time when the defense effort is moving in high gear. Defense planners see the worst period of shortage in this quarter, the first quarter of 1952, and even into the second quarter. They may well be optimistic — unforseen occurrences, such as a prolonged steel strike, could throw all plans sadly off kilter and push the balancing of supply and demand farther along in the months ahead. That the defense effort is going to continue seems certain. The contracts have been let, and more are going out every day until they reach a peak sometime in the first half of next year. Following that, deliveries on orders will continue for perhaps another year, or longer."

Final speaker of the day was Robert M. Nelson, Armco Steel Corp., Middletown, Ohio. He dealt with the steel situation from the viewpoint of the producer. At one point he cited some background on the shortage of galvanized sheets.

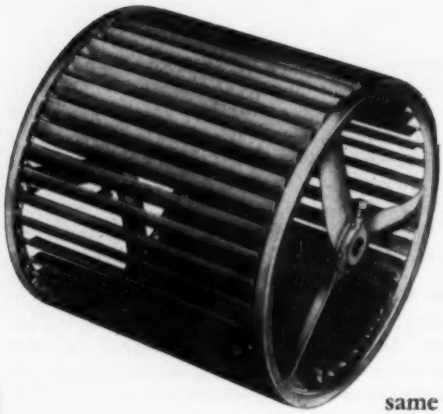
"This happened to galvanized sheets when the copper strike and zinc "work stoppage" in August and September cut into the zinc production. We received our October allotment of zinc during the last week in September. It was only about half of what was scheduled. Along with it came a directive to produce all military orders first and then to cut all other orders 45 per cent.

"At the time of receiving the directive many of our orders had been rolled and were ready for coating. As a result, some of our customers received their orders complete and others received nothing in October.

"We do not know how long this drastic cut in zinc allotments will prevail. As long as it continues, our galvanized sheet production is nearly halved.

Adjournment of the meeting followed Mr. Nelson's talk.

Morrison Standardization Gives You



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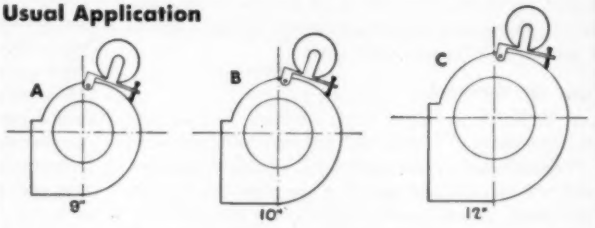
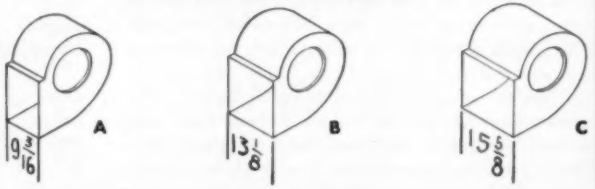
Advantages

1. Interchangeable drives.
2. Larger production of sides if you manufacture these yourself.
3. Smaller inventory can be carried due to interchangeability of parts.

Usual Application



Standardization Consists of Using Same Diameter Wheels and Varying Widths



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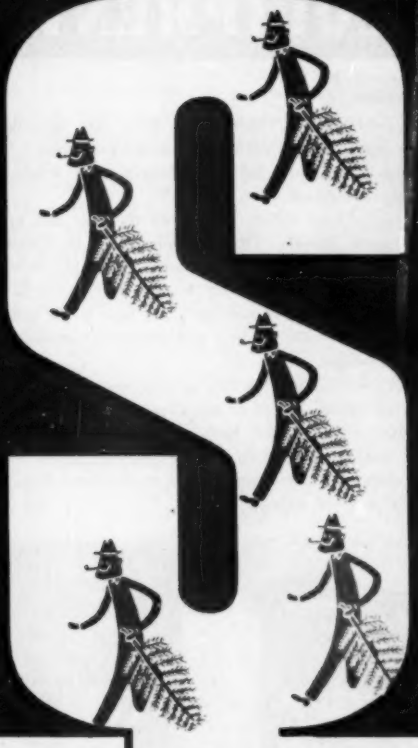

● Remember, of all the warm air furnaces now being installed, 4 out of 5 are *forced air* units. Added to these are the *4 million* forced air furnaces already in operation. Cash in on this huge market by selling AMER-*glas* Filters. Set yourself up to handle the post-Christmas volume two easy ways: 1. Remind your customers that *they need filters.* 2. Be sure your stock of AMER-*glas* Filters is ready for the demand . . . send for the AMER-*glas* profit story, today!

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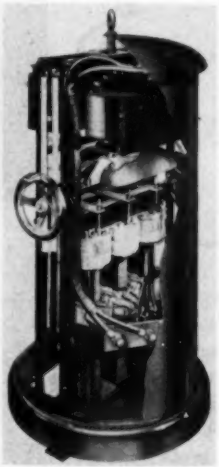
EQUIPMENT DEVELOPMENTS

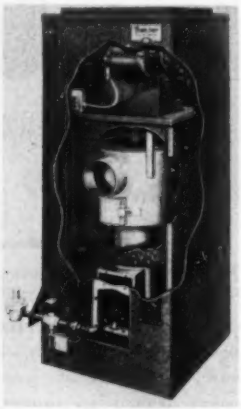
DC Welder

A. O. SMITH CORP., Milwaukee, Wis., has introduced a new heavy duty direct current welding machine. The machine is designed for all industrial uses, where dc welding is required.

Extensive field testing has shown the new unit to be free of stack failure. This is accomplished by directing a high velocity downdraft of cool air over the rectifier stacks before passing this air through other parts of the machine. The blast is expelled at the base of the welder. This assures proper cooling and promotes internal machine cleanliness.

Other construction features are the case diameter fan and wind tunnel design to assure adequate, efficient air flow over all energized parts. The primary coils are raised and lowered easily on ball bearing jacks. The heavy duty dc welding machine is available in 200, 300 and 400 ampere ratings. AA 169





Above: Gas Fired Furnace
Left: DC Welder

Gas Fired Furnace

THATCHER FURNACE CO., Garwood, N.J., offers a Series 511 counterflow highboy winter air conditioner. Gas fired, AGA approved for both natural and manufactured gases, 75,000 and 95,000 Btu input, also 60,000 to 76,000 Btu at bonnet.

Designed for limited space installation, it will fit into an alcove, closet, or utility room. Factory assembled, easy to handle and install.

Front flue makes inspection easy and cleaning possible without need for wide clearance around sides and rear. Heavy gauge steel construction assures long life. Leak proof joints prevent leakage of gases, infiltration of air, or escape of odors. Uniform floor to ceiling temperatures. AA 170

Electric Drill

BLACK AND DECKER MFG. CO., Towson, Md. A new model of the ¼ in. Holgun drill has been announced. Redesigned with a new handle shaped for plenty of finger room, the drill is rated for heavy duty and continuous production service.

Features are full sized ball bearings, heat treated gears, splined gear shafts and smooth contour aluminum housings. This heavy duty drill is an end handle unit and is available for standard or low speed. The standard speed unit has a no-load speed of 1700 rpm (optional 2500, 3500 or 5000 rpm). Low speed unit has a no-load rating of 600 rpm (1000 rpm optional).

Compact in design and weighing only 3¼ lbs the drill is especially useful in close corner drilling and for long hours of continuous operation because of its low fatigue factor. It is powered with a universal motor and is available for 115 volt or 220 volt power lines. Standard equipment includes 2-pole automatic release trigger switch and locking pin, 3-wire cable and plug, 3-jaw geared threaded chuck and key. AA 171

Above: Electric Drill
Right: Blower Filter Unit

Blower Filter Unit

AIR CONTROLS, INC., Cleveland, Ohio, presents a new 10 in. blower-filter package unit.

Compactness and versatility are the keynotes of this model. Features include a sight-feed oil gauge which insures a correct quantity of oil lubrication, an oil reservoir capable of holding four to five years supply, self-aligning bearings, and a streamlined bracket which does not restrict air flow. The porous bronze bushings allow required amount of oil to flow to all friction points and are cushioned with a rubber sleeve. A newly designed brazed blower wheel provides rugged, sturdy and perfectly balanced construction.

A long-hour type motor is equipped with automatic overload protection and is resilient mounted for less vibration and quiet operation. The unit includes air filters and leakproof frames. AA 172

Copper Expansion Joint

CHASE BRASS & COPPER CO., Waterbury, Conn. A new 18 oz copper joint to provide for the expansion and contraction of copper flashings at the base of parapet and main

Coupon on this page

building walls. Efficient and economical, it permits the use of a prefabricated copper expansion joint where far less durable and more costly methods were previously employed.

The new base flashing expansion joint is formed at an angle to fit exactly the standard dimensions of copper base flashing. It has a 4 in. horizontal leg and a 12 in. vertical member. Open seams on the edges of the joint permit fast, easy interlocking and soldering of adjoining lengths of base flashing.

Running down the full length of the member is a half circle approximately 1 in. in diameter. This half circle permits movement of base flashing due to temperature variations without its buckling and cracking. The joints should be placed at a maximum of 24 ft apart along the base flashing.

Either plain or ribbed copper cap flashing can be used with the base flashing expansion joint. A prefabricated cap box is also furnished with each expansion joint for attaching to the cap flashing as a protective cover for the half circle in the expansion joint. AA 173

Expansion Joint
Right: Heavy Duty Hole Saw

Heavy Duty Hole Saw

MILLERS FALLS CO., Greenfield, Mass., has introduced a new line of high speed, heavy duty hole saws in sizes up to 4-1/2 in. diameter.

Using a specially selected high speed steel edge welded to an extremely tough alloy steel back, these cutting tools are practically unbreakable in use and are capable of fast, clean cutting in hard and mild steels, aluminum, brass and bronze, iron and steel pipes, plastics, etc.

Holes to a depth of 1-1/8 in. may be cut in solid stock. Since the body of the saw is slightly smaller than the cutting diameter, the complete tool follows through the hole it cuts. Cuts may be made through two or more walls or partitions, through both sides of large pipes, or to any depth desired in stacked material.

This new saw is particularly useful in metalworking, aircraft, construction, heating, piping and air conditioning industries.

Blu-Mol hole saws can be used in portable power drills with 1/4 in. chucks for small diameters and 1/2 in. for larger diameters. The complete line includes 40 sizes ranging from 5/8 to 4-1/2 in. diameter. AA 174

Oil Fired Warm Air Furnace

GILBERT & BAKER MFG. CO., West Springfield, Mass. An oil fired warm air furnace capable of delivering 75,000 Btu stands only 62-1/2 in. tall and measures 21 in. square. Its compact size and relatively high heat capacity makes it ideal for heating small homes.

Features a gas tight, all welded radiator offering large heat transfer area within a compact space. A multi-flue construction requires minimum draft even with low chimneys. Completely assembled and wired at the factory, unit weighs 490 lbs, is made of heavy gauge steel with aluminum backed asbestos aircell insulation, and finished with smooth gloss enamel in two tone green. A burner with a patented economy device fires this new unit. AA 175

Gas Control Switch

GENERAL CONTROLS CO., Los Angeles, Calif., is now producing an inexpensive diaphragm switch which is actuated by gas pressure. The switch is applicable to heating installations where it is necessary to operate a switch by a variation in gas pressure.

Operation of the L-38 low pressure switch is simple and effective. Pressure applied against a spring-loaded diaphragm operates to tilt a mercury tube switch which is normally open or closed. The diaphragm is made of material impervious to all types of gases and the spring loaded mechanism may be easily adjusted by a set screw located in the top cover plate.

The control is suitable for air or gas applications only, at rated pressures. Installed between an automatic gas valve and a gas burner, it insures instantaneous switch operation for a blower or pump motor.

(*Continued on page* 89)

For Your Convenience to Cut Out and Mail

We will ask the manufacturer to send full particulars about the equipment and literature described.

Be sure to circle the items for which you wish complete information.

12-51

169 170 171 172 173 174 175 176 177 178 179 180 181
360 361 362 363 364 365 366 367 368 369 370

Name ..... Title .....

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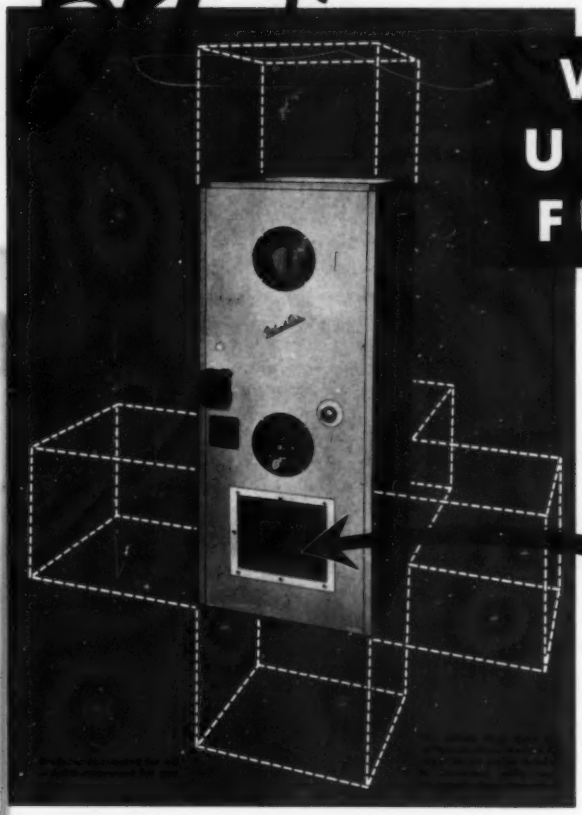
Mail to AMERIAN ARTISAN, 6 N. Michigan Ave., Chicago 2, Ill.

24 DIFFERENT COMBINATIONS FROM ONE BASIC UNIT!



WINKLER UNIVERSAL FURNACES

Today's most versatile heating plant for the small home! Satisfies virtually every owner preference you'll meet—simplifies stocking.

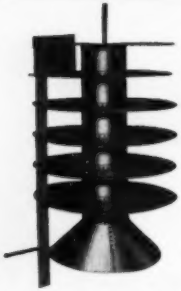
Starting with Model "WU" Gravity Furnace as the basic unit, 34 different gravity or forced air combinations can be made by the selection and arrangement of supplementary equipment. The Winkler Universal Furnace can be equipped with either an oil or gas burner—changeable from one to the other at any time.

Whatever combination is selected, it's a complete package . . . pre-wired . . . everything for a complete winter air conditioning installation except ducts.

The Winkler Universal is a heating man's dream . . . write today for information.

YOUR CHOICE OF THESE FIRING UNITS FOR GRAVITY OR FORCED AIR

1. **Natural or Mixed Gas Burner.** 56,000 to 76,000 BTU Output.
2. **Manufactured Gas Burner.** 56,000 to 76,000 BTU Output.
3. **L P Gas Burner.** 56,000 to 76,000 BTU Output.
4. **Natural — L P Combination Gas Burner.** 56,000 to 76,000 BTU Output.
5. **Low Pressure Oil Burner.** 52,000 to 82,000 BTU Output.
6. **Hi-Pressure Oil Burner.** 82,000 BTU Output.
7. **Pres-O-Vape Oil Burner.** 56,000 to 60,000 BTU Output.



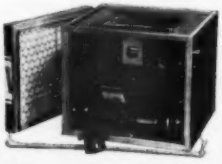
NEW HEAT-STORING DESIGN

The revolutionary Winkler Baffle Assembly smoothes out the temperature variations and discomfort of "off and on" heating. It forms a series of heat storage cells—in effect a multiple "wringer" which thoroughly extracts heat from the flue gases. When the burner is operating, part of the heat warms the circulating air, while some is stored under the baffles for emission during the "off" period of the burner.

This utterly different design introduces a new standard of comfort at low cost.

FAN-FILTER KIT

Can be installed in any of the positions shown above. Casing opens at top, front, back and bottom—doors and filter frame are same size and interchangeable. Blower remains in same position for different openings.

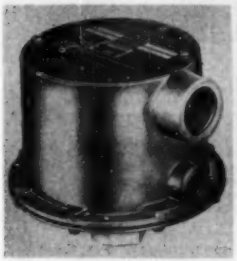


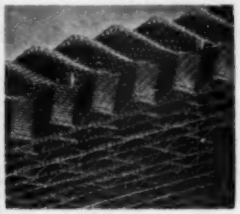
Send your scrap iron and steel to the scrap yard—it is essential to steel production.

AUTOMATIC HEATING EQUIPMENT

Coupon on page 87

Operating point is adjustable over a pressure range of 3 to 12 in. wg and operates from pressure differential of 2 to 4 in. wg. AA 176





Above: Air Filter
Left: Gas Control Switch

High Velocity Air Filter

AIR FILTER CORP., Milwaukee, Wis. A new high velocity air filter, Airsan Viro-Crimp, is designed to operate at face velocities of 300 to 500 fpm at minimum resistance and constant high efficiency. Filter core is viscous type and constructed of horizontal layers of galvanized wire mesh arranged for a large filter area with small pressure drop. Edges are hemmed for easy, safe handling.

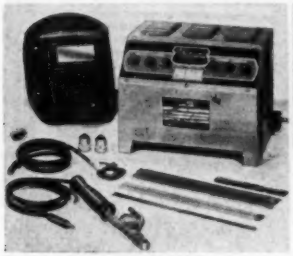
These filters are easily cleanable and provided with drain slots. They are of steel construction throughout and the galvanized steel frames are bronze welded at the corners and joints. AA 177

AC Welder

TRINDL PRODUCTS, LTD., Chicago, Ill., has announced the addition of a new portable welder.

Model 80A has a welding range of 20 to 80 amps with a reserve sometimes needed for the exceptionally tough job. It handles 1/16 to ⅛ in. rods on work ranging from 24 gauge to ¼ in. sheet metal.

Advanced engineering features incorporate 9 heat stages adaptable to either arc welding process or twin carbon torch method. Operates on 118 volt current. Especially useful for on-the-spot repairs, service, and maintenance. AA 178



Above: Air Hammer
Left: AC Welder and Equipment

Air Hammer

SALISBURY CORP., Los Angeles, Calif., announces availability of a new air hammer. A light hand tool weighing just over two lbs, it is designed to perform medium heavy duty work in general shop and maintenance operation.

Working at 120 psi this air hammer strikes up to 6000 blows per minute or may be geared to any lower speed by means of simple finger trigger action.

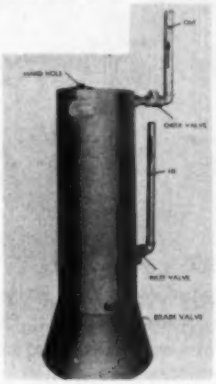
Outstanding safety feature is 3-point ballbearing chuck which locks tools in working position and eliminates hazard of tool ejection. Driving piston constitutes the only moving part.

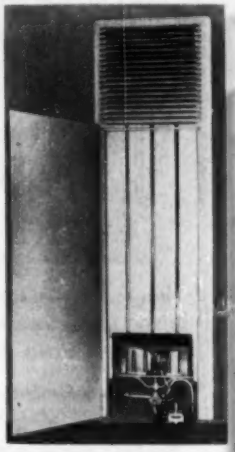
Manufacturer offers hammer singly or with specialized tool kits for various types of services, such as maintenance, welding, foundry, caulking, etc. Sixty-six different tools available for use with hammer and blanks offered for making tools for specialized tasks. AA 179

Compressed Air Line Drier

VAN PRODUCTS CO., Erie, Pa. Vi-Speed air drier for keeping compressed air lines clean and dry. Removes moisture, oil, dust, dirt, smoke, and reduces humidity below condensation point. No moving parts. Self-cleaning, self-regulating, and fully automatic. Filter material should be added once a month.

Two sizes are available: model 25 which delivers 25 cfm and model 200 which delivers 200 cfm. AA 180





Above: Air Line Drier
Right: Vented Wall Heater

Vented Wall Heater

WILLIAMS RADIATOR CO., Los Angeles, Calif. A new recessed vented wall heater employs a vent dilution system which boosts normal heat circulation and efficiency.

The vent dilution system enables the heater to discharge heat from its entire register area, resulting in more heat circulation. Non-vision, full-flow louvres direct an abundant supply of heat into the room and away from the walls.

Compactness of the new unit is also emphasized. Both single and dual models slip easily between two standard 4 in. studs on 16 in. centers.

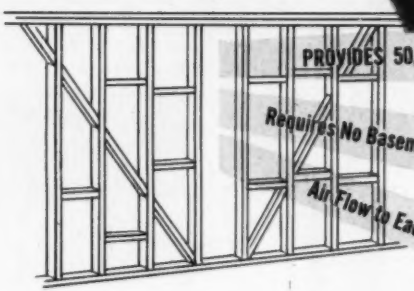
Hinge arrangement enables the wall panel to swing open easily, providing convenient access to controls and furnace for cleaning and servicing.

Each Uniflow unit is guaranteed for 10 years and approved under AGA central heating requirements.

Two sizes are available: 25,000 Btu single and 45,000 Btu dual. Three additional sizes, 35,000 Btu single, 35,000 Btu dual, and the 57,000 Btu dual are scheduled for immediate production. AA 181

New! Pion-Aire gas wall circulator

Actually Fits *Between* Standard Studs!



PROVIDES 50,000 B.T.U. INPUT

Requires No Basement or Floor Space

Air Flow to Each Room Adjustable

It's the heating sensation of the day! Now you can meet your long-felt need for clean, economical 50,000 B.T.U. heating in homes, motels, stores, offices. **Pion-Aire** gives you quick sales, easy installations, a good profit.

Customers are delighted with the beautiful installation jobs. No cutting of floor or floor covering. Valuable floor space saved.

Pion-Aire's diverter automatically circulates clean, warm air. Air flow to each room adjustable. No obnoxious fumes—no sweating walls or windows. Thermostatic or convenient hand-height manual control. Fine for second floors. Priced low. Economical to operate. Heating elements guaranteed 10 years against burning or rusting out.

Write **FOR FREE BULLETIN!**

Architects in your area are hearing about and specifying Pion-Aire. Be sure you get your full share of this profitable business. See your jobber. Also write us for information about the complete line of Pion-Aire Wall Heaters.

Pioneer **FURNACE CO.** • 3131 San Fernando Rd., Los Angeles 65, Calif.

Division of Pioneer Water Heater Corporation • Manufacturers of Pioneer Water Heaters

. . . YET SCRAP INVENTORIES ARE ALARMINGLY LOW. *YOU* ARE BEING COUNTED ON TO HELP KEEP THE FURNACES WORKING . . . TO AID DEFENSE

With our increased steel production, the furnaces are gobbling up an enormous amount of iron and steel scrap.

More—far more—scrap than is at present going into their scrap stockpiles.

Many mills are operating on a hand-to-mouth basis. Some are already threatened with shut-down—for lack of scrap.

The Danger Is Increasing

Will efforts to fill the tremendous demands for steel fail because of lack of scrap?

Steel is made from 50% scrap. We could be severely handicapped—in our aim to keep abreast of both military and civilian requirements—if scrap suppliers can't keep pace with productive capacity.

But they *can* keep pace . . . with *your* help!

Enough Scrap IS Available!

Yes—the only problem is to get the available extra scrap from where it is—to where it's needed.

Where is it?

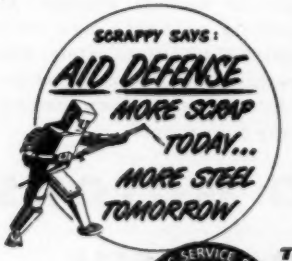
In *your* business . . . in the form of old machines and equipment, tools, implements, dies, jigs, fixtures, outmoded structures, chains, valves, wheels, pulleys—any old iron and steel that's rusting away.

Six Million EXTRA Tons Needed!

By the end of 1952, we'll be producing steel at an annual rate of 20 million tons more than in 1950. That means we will need at least 6 million more tons of scrap than we've ever needed before.

It's up to you. Write at once to Advertising Council, 25 W 45 St., New York 19, N. Y., for a free copy of "Top Management: Your Program For Emergency Scrap Recovery".

Please write today—there's not a day to lose.



NON-FERROUS SCRAP IS NEEDED, TOO!

This advertisement is a contribution, in the national interest, by

AMERICAN ARTISAN

DELCO MOTORS

MOTORS FOR OIL BURNERS
Delco flange-mounted motors, split-phase, 50- and 60-cycle, constant speed—⅙ to ¼-horsepower ratings.

MOTORS FOR BLOWERS
Delco resilient-mounted motors, split-phase and capacitor-start types, single- and two-speed designs — ⅙ to ¾-horsepower ratings.

Designed for Durability

Delco motors are specifically designed to endure in oil-burner applications, and when used with belt-driven blowers and fans in heating, air conditioning, and air filtering systems. All Delco motors conform to NEMA and other established standards of efficiency, safety, long life and quiet operation. And all are Thermotron-protected against damage from stalling, overload, and faulty power supply.

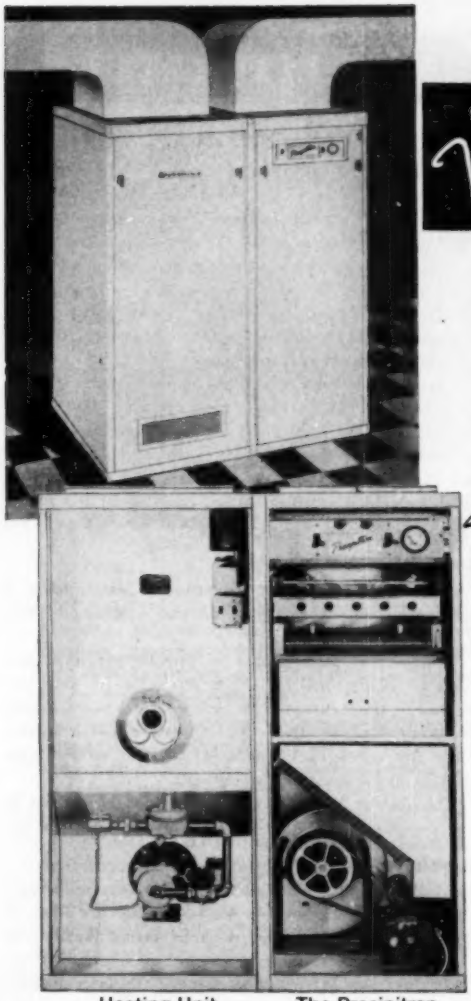
NOTE TO MANUFACTURERS:
There are Delco offices located in Chicago, Cincinnati, Cleveland, Dallas, Detroit, Hartford, Philadelphia and St. Louis.

DELCO DAYTON OHIO

DELCO MOTORS

DELCO PRODUCTS
Division of General Motors Corporation · Dayton, Ohio

SEE YOUR LOCAL DELCO MOTOR DEALER



Heating Unit The Precipitron

GAS OR FUEL OIL

The Dualtron®

CLEANS as it HEATS with the WESTINGHOUSE Precipitron

DUALTRON is a new—but thoroughly proved—system of heating, combined in a single, compact, space-saving unit with the famous Westinghouse Precipitron. It cleanses air electronically—removes up to 90% of the damaging dirt before it gets a chance to enter the heating system.

DUALTRON then heats the clean air automatically, with an efficiency that brings new comfort in any degree of winter weather. It's all one operation.

LESS CLEANING — No constant, heavy house cleaning. Draperies, furniture coverings, rugs and walls stay clean and fresh for unbelievably long periods.

MORE COMFORT—No sudden gushes of warm air, alternating with cold drafts. Heat flows evenly, gently. Humidity is maintained at correct levels — you breathe clean, moist air.

Architects and Contractors ARE WELCOME TO OUR ENGINEERING SERVICE

The DUALTRON Company
322 Perry Highway Pittsburgh 29, Pa.
Phone WEllington 1-2021

A MESSAGE TO THE WISE . . .

Warm Air Heating Dealer
Sheet Metal And
Air Conditioning Contractor
Evaporative Cooler Dealer

THOSE WITH SHEET METAL FACILITIES WILL DO WELL TO LATCH ON TO THE PROFIT-STUDDED DE-HU-MATIC EVAPORATIVE COOLER FRANCHISE IN THEIR CITIES WHILE IT IS STILL AVAILABLE.

De-Hu-Matic has been shattering a lot of preconceived notions. Long has the word gone round that low cost evaporative air coolers could function successfully only in desert areas; that elsewhere they produce muggy, "dampish" results.

De-Hu-Matic dealers get a "kick" out of this while they rake in the long profits. They know differently, as do hundreds of delighted De-Hu-Matic users in such cities as Detroit, Michigan; Boston, Massachusetts; Cleveland, Columbus and Dayton, Ohio; Wilmington, Delaware; Atlanta, Georgia; Alexandria, Louisiana and other humid, high wet bulb cities, too numerous to mention.

This evaporative cooler is a "horse of a different color". It delivers its "different" cooling performance anywhere — everywhere — regardless of climate — because of an exclusive automatic, atmospheric balancing, temperature zone control over the vaporization process. And now, even this is augmented by the latest De-Hu-Matic comfort development — thermal control over skin evaporation made possible by its sensational automatic air distribution grille.

Want in? Want in on something that's got some real money tacked onto it? It's usually simply a case of showing these controls and walking off with the orders of enthusiastic users "carrying the banner" and directing other prospects looking to save money on their air conditioning requirements over to you.

We tell you it's a natural so may we make a "profit-studded" suggestion? It is that you write in for our dealer's proposition. Descriptive literature, prices and the full De-Hu-Matic story will be forthcoming. We feel we can promise that you will like what you see and read.

DE-HU-MATIC AIR CONDITIONING COMPANY

1823 South Harwood Street

DALLAS, TEXAS

PS. Desert area evaporative cooler dealers. De-Hu-Matic has much to offer you, too, in non-fluctuating, controlled, performance that completely compensates for seasonal and climatic changes. Invaluable during spring and autumn operation.

De-Hu-Matic

NEW LITERATURE

Coupon on page 87

Totally Enclosed Motor

ALLIS-CHALMERS MFG. CO., Milwaukee, Wis. Construction details of a totally enclosed, fan cooled motor type APZ are described in a new bulletin.

Due to the elimination of internal air passages and dirt catching pockets, the motor is easy to keep clean. This feature, together with an efficient cooling system, makes the motor suitable for use where there is dust, dirt, fly ash, rain, snow, or corrosive gases.

Construction features of the motor, which can be mounted anywhere include a rigid cast iron frame which resists corrosion and holds bearings permanently in alignment, double insulated stator, improved heat dispersal, die cast rotor, rotating seals on both ends of motor, double shielded bearings, ribbed end shields, and roomy conduit box. AA 360

Time Saver Disc

DAYTON ROGERS MFG. CO., Minneapolis, Minn., offers a time saver disc which gives decimal equivalents from 1/64 to 1 in.

Diameter of tap, number of threads per inch, and diameter of tap drill for U.S.S. screw threads may also be had by simply turning the celluloid dial to the diameter of the tap required. On the reverse side a similar table for special and standard machine screws, pipe threads, and screw threads is given.

This disc is made of celluloid and can be carried in any pocket. AA 361

Absolute Air Filters

CAMBRIDGE CORP., Syracuse, N. Y. A circular and technical data on the Cambridge Absolute Filter describes its development as a result of research during World War II. Protection of military personnel against poisonous dusts and fumes in combat necessitated an intensive study of airborne matter and methods of removing it.

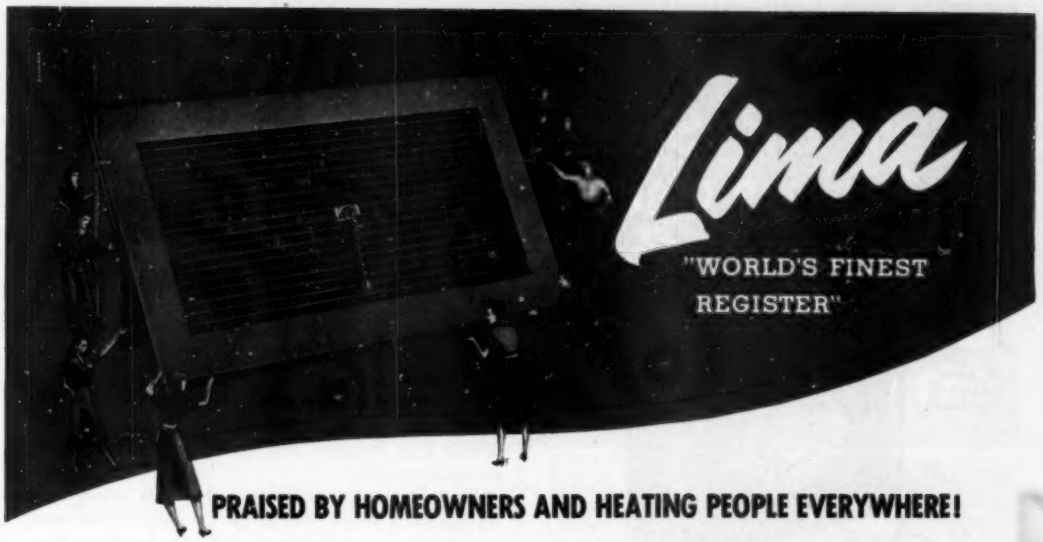
The media of these filters is a high efficiency paper pulp into which fine asbestos fibers have been introduced during manufacture. Stops dust, smoke, and fumes below .3 microns in size. AA 362

Condensed Full Line Catalog

STURTEVANT DIV., Westinghouse Electric Corp., Boston, Mass., announces a 16 page, condensed full line catalog. Equipment for air conditioning, air handling, and air cleaning is described in considerable detail.

Under air conditioning equipment will be found unit air conditioners, unit heaters, home electronic air cleaners, hermetically sealed compressors, condensers, and water coolers. What the equipment consists of, its features, and its specifications are included.

The air handling apparatus section includes ventilating, air conditioning and heating equipment, general purpose and industrial fans, and heavy duty and mechanical



PRAISED BY HOMEOWNERS AND HEATING PEOPLE EVERYWHERE!

. . . because it saves installation time and costs! Amazing "Balancing Bell"* control eliminates quadrant dampers, puts volume control in the *register itself!* One man does balancing, quickly, easily, by placing bell at proper setting on chain which controls valve!

. . . because it simplifies heat control! No more service calls for re-balancing! With simple instruction, homeowner can adjust heat delivery to individual rooms by himself! And, to shut off heat completely, he merely pulls chain out, thus closing valve tightly!

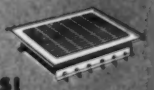
. . . because it's as strong as it is beautiful! No center strip or mullion to detract from smooth, one-piece face! Gives perfect draft-free air diffusion! Vertical diffusion blades individually *resistance-welded* to face louvers! Handsome "metallac" finish beautiful by itself, a perfect base for any other finish.

NEW! *Lima* FLOOR DIFFUSER

SPECIALLY DESIGNED FOR PERIMETER HEATING!

HERE'S WHAT YOU'VE BEEN WAITING FOR! The new Lima Floor Diffuser has a wide but *flat* diffusion pattern that lets you place a spray of warm air in a definite area without smudging walls and ceilings. *Regardless of volume, the pattern stays constant.* Under large windows, or at either side of doors, it counteracts drafts. See Lima catalog for details and specifications.

NEW SMARTNESS, NEW RUGGEDNESS IN *Lima* FLOOR REGISTERS!



A full line of floor registers, each as strong and good-looking as the next! For *super strength*, Lima combines solid, one-piece, *welded* steel grids and frames with off-set, "smash" welded corners! For *new beauty*, Lima features smart new *Duragold*, a rich, harmonizing finish that presents a handsome gold-hammered appearance (also available in oak grain)! By actual test, Lima Floor Registers show virtually no wear even after *3 years under heavy traffic!* Order now!

*Patent applied for

STOCK UP NOW! *Immediate shipment on all sizes, wall, floor and baseboard units! Any quantity!*

THE *Lima* REGISTER COMPANY
Lima, Ohio

SEND COUPON FOR FREE DESCRIPTIVE MATERIAL

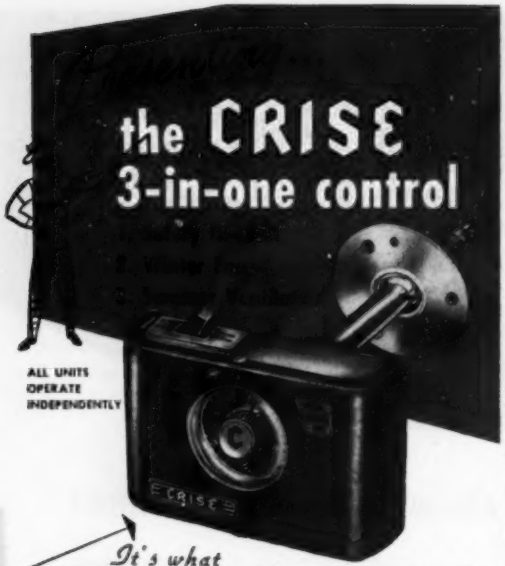
LIMA REGISTER COMPANY AA-12-51
651 N. Baxter Street, Lima, Ohio

Gentlemen: Please send me free descriptive material on the complete line of Lima registers and faces for installation in walls, baseboards and floors.

Name.....

Address.....

City.....*Zone*....*State*.....



It's what your customers want!

Model FAL-10A

Here's our latest addition to the Crise line of better performing, better looking, *more saleable* controls. It's a combination winter fan and limit control with the added feature of an easily accessible manual switch to provide continuous summer ventilation. All components operate separately and independently of each other . . . all are engineered in the Crise tradition for dependability and long life.

You can sell this and other *economically priced* Crise controls at a good profit while giving your customers the highest quality and best value. See your jobber or write us for details.

CRISE **THE MOST VERSATILE LINE**

These multi-purpose controls save in inventory—permit stocking half the normal number of control types.

TYPE FOL-60 Warm air limit control or fan control

TYPE FOL-70 Hot water control, immersion type

TYPE FOL-50 Hot water control, surface type

TYPE FAF-15 Two speed furnace fan control

TYPE FAL-30 Hot water control, dual circuit, immersion type

CRISE CONTROLS
a division of
ACRO MANUFACTURING COMPANY
Columbus 16, Ohio

Coupon on page 87

draft fans. Specifications and capacity data are in considerable detail.

The third and final section of booklet B-5164 includes electrostatic air filters and other air cleaning equipment including oil mist control unit. How-it-works and how-to-use-it information is in usable form. AA 363

Withholding Tax Chart

DELBRIDGE CALCULATING SYSTEMS, INC., St. Louis, Mo., announces publication of a newly revised edition of their social security and withholding tax chart. Created for the convenient use of accountants and payroll departments this revised chart is based upon the new Revenue Act of 1951.

Published in four editions, for weekly, biweekly, semimonthly and monthly payrolls, this hinged card, visible index system has a neat and durable cover. All editions include a set of tables treating daily and miscellaneous period deductions.

An important improvement is that both withholding tax and social security deductions are shown on the same line for each wage bracket so that both deductions may be recorded at once. This saves time and reduces the possibility of error. AA 364

Heating Design and Practice

MCGRAW-HILL BOOK CO., INC., New York, N.Y., announces the publication of a book entitled Heating Design and Practice which furnishes a practical coverage of heating, providing methods of design and operation of steam, hot water, and warm air heating systems. It is profusely supplied with illustrations from actual working cases.

Design, application, and control of radiant heating and baseboard units, the heat pump, space heaters, fireplaces, fans, and filters are fully covered. Components such as boilers, steam generators, grates, stokers, stacks and chimneys are also thoroughly treated. A section on fuels and combustion gives fuel classifications and relative combustion characteristics. Also shown are principles for using the ignition arch, advantages of mechanical circulation, operational characteristics of gravity systems and eight cardinal steps in design of forced circulation system.

The manual shows how to select the right heating systems for particular jobs and concludes with a variety of working facts on how to prepare specifications and make bid analyses. AA 365

Stud Welding Information

NELSON STUD WELDING DIV., Gregory Industries, Inc., Lorain, Ohio. How to Design for Nelwelding is a concise 8 page manual prepared to aid designers and production engineers in the fast, economical solution of fastening problems.

In addition to listing stud specifications and recommended stud selection guides, the manual presents detailed suggestions concerning template design, provisions for accommodating fillet, table on clearances. AA 366.

(*Continued on page 98*)

ONLY WHEELING CAN MAKE

COP-R-LOY

REG. U. S. PAT. OFF.

THE COPPER ALLOYED STEEL

COPPER ALLOYED STEEL SHEETS

IN shop after shop—on job after job—
wise users of galvanized sheets choose Wheeling Cop-R-Loy. Why? Because Cop-R-Loy is *doubly* protected against corrosion!

First line of defense: Wheeling's galvanizing.

Second line of defense: Wheeling's Cop-R-Loy formula in the base metal.

For all your fine work, specify Wheeling Cop-R-Loy Sheets.

MORE SCRAP IS NEEDED FOR MORE STEEL... GET YOUR SCRAP IN NOW!

Every ton of steel made requires a half ton of scrap! You can help meet the mounting demand for scrap. Clean up the shop. Sheet trimmings, worn-out or broken machine parts, empty drums. GET YOUR SCRAP TO THE SCRAP DEALER . . . NOW!

Wheeling

WHEELING CORRUGATING COMPANY

WHEELING, WEST VIRGINIA

ATLANTA · BOSTON · BUFFALO · CHICAGO · COLUMBUS · DETROIT · LOUISVILLE
KANSAS CITY · MINNEAPOLIS · NEW ORLEANS · NEW YORK · PHILADELPHIA · RICHMOND · ST. LOUIS

CONTROLLED DRAFT BY
field
BAROMETRIC CONTROLS

...the only draft control that's nationally advertised to your customers

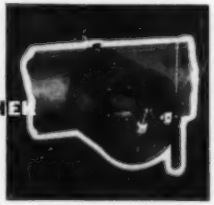
field TYPE M

First and finest for all types of automatic heating plants.

field TYPE R and "SCOTTY"

First and finest for all types of space heaters and ranges.

field BAROCHE



First and finest for hand-fired furnaces and boilers, a combination check damper and draft control.

field RNA-W

First and finest for automatic water heaters.

field CONTROL DIVISION
H. D. CONKEY & CO., MENDOTA, ILL.
AFFILIATES:
Conco Building Products, Inc.
Brick - Tile - Stone
Conco Materials Handling Division
Cranes - Hoists

Coupon on page 87

Chromium Stainless Bulletins

ARMCO STEEL CORP., Middletown, Ohio. Where to use 17 chromium stainless as an alternate for 18-8, and fabrication of 17 chromium stainless are the subjects of two new companion publications just issued.

A bulletin entitled Where to Use describes the various properties of 17 chromium stainless, what care to give it, and lists normal applications, alternate uses, questionable applications and unsatisfactory uses.

The fabrication data bulletin covers all fabricating procedures for type 430 stainless (17 chromium) with illustrations showing typical changes in die practice, weld microstructures, and tables listing mechanical properties of fusion welded joints and spot welds. AA 367

Pipe Coils

ACME INDUSTRIES, INC., Jackson, Mich., has published catalog No. 26-B on pipe coils. This brochure covers various styles of pipe coils, illustrating such types as spiral, rectangular, flat, oval and double coils.

General specifications and bending data is furnished and a compact method of selection. Included are tables of heat transfer coefficients for pipe coils in both still air and water and circulating air and water. AA 368

Damper Regulators

YOUNG REGULATOR CO., Cleveland, Ohio, has recently issued a bulletin on a complete line of manually controlled damper regulators for every type of heating, ventilating and air conditioning installation in office buildings, schools, residences, institutions, etc.

Sections are devoted to direct and remote damper controls, air split damper regulators, relief and fresh air dampers, regulators for mounting on the surface of the duct and concealed and flush cup damper regulators. Also mentioned are multiple blade dampers, remote controlled registers, butterfly damper accessories, expansion joints and unions. Engineering service is furnished for special design of dampers and regulators. AA 369

New Burner Bulletin

CLEAVER-BROOK CO., Milwaukee, Wis. A new four page, two color bulletin AD-101 presenting the features of both gas and combination oil and gas burners for commercial and industrial use has just been issued.

Advantages of five burner models are given and back cover of bulletin includes chart showing ratings and capacities of each. Complete with illustrations of models, it points out efficiency, flexibility, cleanliness, economy and ease of operation of units. Also describes forced air draft system and the electronic controls.

Bulletin explains burners actually furnish 100 per cent of all air for combustion. Gas and oil can be burned completely without induced secondary air. Simple change-over makes it possible to switch combination burners from gas to oil or oil to gas in a few minutes. Burners use natural, mixed or manufactured gas. Combination unit also burns low cost No. 5 fuel. AA 370

CUT CONTOURS 4 TIMES FASTER

IN HEAVY METAL PLATE

with NEW BAKER SHEAR!!

BAKER
DOES ALL THESE JOBS
Quantity 3, no template required.
Quantity 85, save time with template—no layout required.
Beading operation, entirely within sheet—compare with other methods.
Inside cuts, no starting hole required.
Inside cut, no metal removed—parts will mate when finished.
This job was cut in 22% of time of previous method.
Custom or low-quantity beading done with low tool cost.

SAVE TIME 5 WAYS!

Do your heavy duty cutting *faster and better* with the Baker Tru-Edge Contour Shear! It reduces operating time to less than ¼ of the time required on previous machines—as shown by actual cases on record because:

- ★ FAST CUTTING . . . 10 to 36 ft. per minute.
- ★ BURR FREE EDGE . . . No finishing required.
- ★ NO TEMPLATE NEEDED.
- ★ NO STARTING HOLE for inside cuts.
- ★ Cuts various thicknesses without adjusting machine.

Capacity: 6 gauge in mild steel, 7 gauge in stainless steel. Simple in design, only 5 moving parts. Versatile—does many jobs with speed and accuracy. Saves labor. Baker-built dependability.

WRITE . . . for illustrated bulletin and price

BAKER BROS., Inc., Toledo, Ohio

Makers of Better Machine Tools . . . Since 1867

The Tru-Edge Contour Shear is made by Baker Bros., Inc., under license from Industrial Devices Corp., Detroit, Mich.

Complete

YOUR ROOFING JOBS WITH

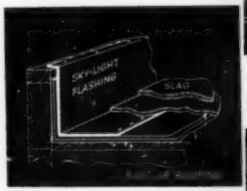
FOLLANSBEE TERNE METAL

Follansbee Seamless Terne Metal is the ideal weathersealing material for built-up, composition, wood, asphalt or asbestos shingle, slate or tile roofs. Tough, durable and malleable, Terne Metal should be used for copings, eaves troughs, flashings, gravel stops, gutters and valleys.

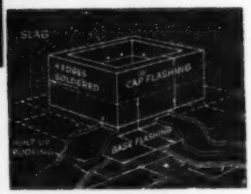
Terne Metal is available now in 50 foot seamless rolls, in widths from 4" to 28". The seamless roll permits fabrication of valleys or gutters in one continuous strip. Pre-cut 5" by 7" flashings, also available, save time and reduce waste.

Follansbee Seamless Terne Metal is the profitable answer to your roofing and weathersealing jobs. Write us for additional information.

A method of flashing a brick wall, parapet or chimney with Terne when composition roofing is laid on a flat deck.



A method of flashing a skylight with Terne.



A method of flashing a ventilator or trapdoor.

Remember, with Follansbee Terne Metal, no provision need be made for expansion and contraction.

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

POLISHED BLUE SHEETS AND STRIP SEAMLESS TERNE ROLL ROOFING
COLD ROLLED STRIP

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. *Sales Agents*—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. *Plants*—Follansbee, West Virginia

FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa. Rochester, N.Y. Fairfield, Conn.

SALES SENSE

by Jack Bedford

Sales Sense consists of convincing the customer that the product or proposition is right for his needs and wants. One way to accomplish this is to compliment the customer. How? Be specific, be sincere, and be complimentary. Compliments convince customers—use them.

$ $ $

Farmer: "I'll teach you to make love to my daughter."
Salesman: "I wish you would. I'm not making much headway."

$ $ $

Advertising, they tell me, is like fire. It can be used to keep the fires of industry burning or to eliminate the plant.

$ $ $

People buy for two reasons—the real reason and an alibi. And, they don't buy for the same two reasons.

$ $ $

Then there was the industrialist who asked his son what he wanted for Christmas and was shocked when his son asked for a baby brother. "Don't you think the time is a little short for such a request?" the father asked.

"Can't you put more men on the job?" his son responded.

$ $ $

Love, like money, is easier to make than to keep.

$ $ $

Salesman Sam says a specialist is a man who knows more and more about less and less.

$ $ $

Coffee at a dollar a cup sounds fantastic even in these times. But, that is what it costs salesmen who spend 15 minutes over a cup of coffee instead of calling on a customer. How much is your coffee costing you?

$ $ $

I wonder why people complained about high taxes fifty years ago?

$ $ $

They tell me an optimist is a guy who thinks he can marry his secretary and continue to dictate to her.

$ $ $

Success, according to the Salesman's Sage, is making more money to meet obligations you wouldn't have if you didn't have so much money.

$ $ $

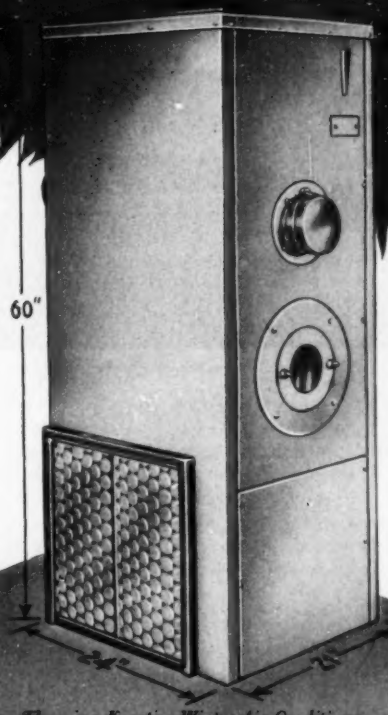
A pat on the back, they tell me, is only a few vertebrae removed from a kick in the pants, but it is a thousand times more effective.

$ $ $

In selling we need to reach the hearts and minds of our prospects. By providing a real service—something people want, we are giving a genuine service. Service is the keynote of modern selling—good Sales Sense.

Kaustine Offers

for 4 out of 5 HOMES



There is a Kaustine Winter Air Conditioner for every type of home.

● It is estimated that four out of five homes built this year will be in the low priced bracket. They now have the "green light" in the building picture. Here's a tremendous market for dealers who push the new Kaustine "Jersey 75" automatic forced warm air furnace. The Kaustine "Jersey 75" can be "lost" in the corner of even a small utility room . . . only 3½ square feet of floor space are needed. Because it is completely production-assembled at the factory, Kaustine is able to include quality features with its very competitive price tag.

The "Jersey 75" is designed to bring you greater profits from low cost housing. We are still able to supply a 275 gallon fuel tank with every unit. Write for complete information. Dept. AD

THE STORY IN A NUTSHELL

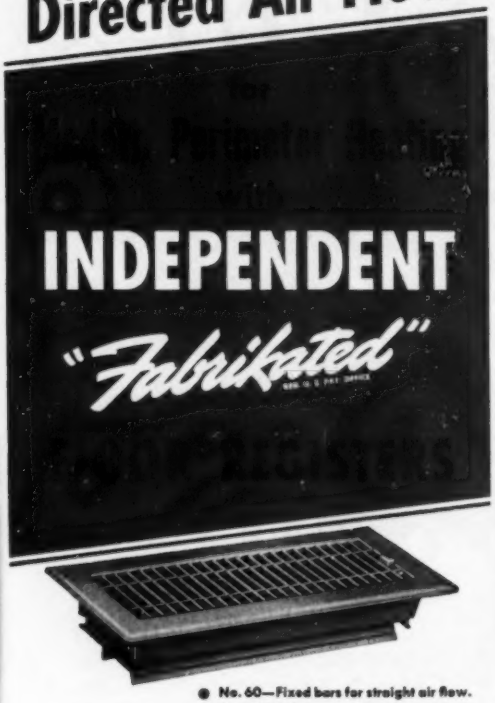
75,000 BTU's • 3½ sq. ft. of floor space • Chrome Steel Fire Pot Liner • Fully Automatic Controls • Shipped "Ready to Install" Weight 324 lbs.

KAUSTINE QUALITY SERVICE SATISFACTION

Kaustine

Modulated Warm Air Furnaces from 65,000 to 270,000 B. T. U.—Septic Tanks—Pressure Vessels—Oil and Gasoline Storage Tanks—Truck Tanks—Custom Built Fabricated Equipment

Directed Air Flow



● No. 60—Fixed bars for straight air flow.
● No. 60A—Bars may be set to direct air flow up or to both sides.

● Register faces of the famous "Fabrikated" construction excel in rigidity, open area and attractive appearance. When valves are set in correct position, an adjusting screw permits directing the air flow to the outside wall.

These floor registers are made in six standard sizes to fit openings from 4 x 10 to 6 x 14 with free air areas of 29 to 62 square inches. All sizes fully comply with code requirements of N.W.A.H. and A.C.A.

Write for complete catalog

Always Leading—Always Progressing

THE INDEPENDENT REGISTER CO.
3747 E. 93rd STREET · CLEVELAND, OHIO

INDUSTRY ITEMS

F. B. CALDWELL has announced his affiliation with Measurement Methods Co., Evanston, Ill. The company manufactures and distributes oil storage and delivery equipment.

Mr. Caldwell had been connected with the Burning Oil Distributors Association and the Chicago Oil Burner Association.

OPENING OF A MODERN, new 16,000 sq ft factory at Palisades Park, N.J. was signalized by the Kresno-Stamm Manufacturing Co. on October 11 in ceremonies attended by the mayor and other local and state dignitaries.

The company will devote the added production potential provided by the new plant to volume manufacture of gravity pressure oil burners.

Kresno-Stamm factory

A new broader distribution, sales and price policy and program were announced at the same time by B. I. Stamm, president of the company. Pointing out that the Kresno-Stamm reputation has been built over the past 25 years on the custom manufacture of quality burner units for the furnaces of many of America's leading furnace manufacturers, Mr. Stamm said that this will continue to be a major part of the company's operations.

BERT ENGSTROM has been promoted by Minneapolis-Honeywell Regulator Co. to assistant sales manager of the wholesale division, in charge of the territory west of the Mississippi river.

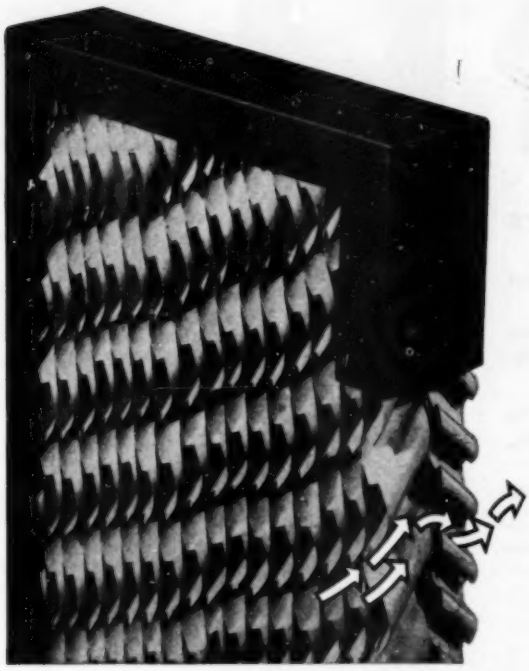
Mr. Engstrom, who has been in sales work for Honeywell since the end of World War II, will make his new headquarters in Minneapolis. He previously was assigned to the company's Cleveland office.

THE STANDARD FURNACE Supply Co. Of Omaha, Nebr., has become the Standard Furnace Supply Co., Ltd., after a change in ownership of the company. J. W. Hennen, having served as vice president and general manager during the past year has acquired control of the company from W. E. Nesbit.

Mr. Hennen has announced that no changes in location, policies, and personnel are contemplated. The firm will continue to manufacture the Standard line of furnace

AIR-MAZE CORPORATION ANNOUNCES PURCHASE OF THE DETROIT AIR FILTER COMPANY

Production of Detroit's DUSTAY® disposable panels to be increased to meet growing demand



Cross-section of the Air-Maze Dustay filter panel showing how air changes direction twice, bringing dust particles in contact with the adhesive-coated cellular channels.

WITH THE ACQUISITION of The Detroit Air Filter Company, Air-Maze—which has previously manufactured only the *permanent* types of filter panels—now offers customers a choice of *disposable* filters as well, thus supplying every filter panel need.

Dustay® filter panels have had outstanding acceptance for warm air furnaces, air conditioning units and ventilating systems because they hold more dirt and last longer than other disposable types. And Air-Maze is stepping up production to meet the growing demand.

HOLD MORE DIRT—LAST LONGER

Dustay filters hold more dirt—and last longer—because: (1) they hold more adhesive—over a pound compared to only 3 to 6 ounces for most competitive makes, and (2) their cellular passages permit "depth" of dirt-holding capacity, where other disposable panels rely on surface loading.

The large amount of adhesive stored within the highly-absorbent filter cores makes possible Dustay's remarkable "wick action". As dust adheres to the collecting surfaces it absorbs the adhesive through capillary attraction. The adhesive-laden dust then becomes a medium to collect succeeding particles.

CHANGES AIR FLOW TWICE

Air changes its direction of flow upon entering the Dustay filter, then is forced to take a different direction half way through. This creates a scrubbing action which assures thoroughly cleansed air at the outlet.

Air-Maze Dustay filters provide low-cost clean air for both home and industry—in warm air furnaces, air conditioning units and ventilating systems. For full details call your nearby Air-Maze representative or write Air-Maze Corp., Cleveland 5, Ohio.

AIR FILTERS
SILENCERS
SPARK ARRESTERS

AIR-MAZE
THE FILTER ENGINEERS

LIQUID FILTERS
OIL SEPARATORS
GREASE FILTERS

FOR trouble-free Gas Appliances

USE THERMAC

Appliance Regulators

1. *Provides constant pressures, constant BTU input and constant flame height.*
2. *Eliminates pilot light failure due to fluctuating pressures. Assures proper operation of automatic controls.*
3. *High capacity, close control. Low maintenance.*
4. *Aluminum alloy, light weight. Sizes: ⅛" to 2½" IPS.*

APPLIANCE BUILDERS CHOOSE THERMAC

Millions of THERMAC Gas Appliance Regulators are in service today on gas furnaces, space heaters, conversion burners, refrigerators, water heaters, air conditioners, boilers, dryers, etc. More and more manufacturers are going to THERMAC simply because THERMAC Regulators are *DEPENDABLE* 24 hours a day under all operating conditions. The reputation of a fine appliance depends in no small degree upon the behavior and control of its gas regulator. Play safe. Use THERMAC—a product with wide national acceptance.

SEND FOR complete literature and prices

THERMAC COMPANY

800 East 108th Street • Los Angeles 2, Calif.

"20 years experience in building gas controls."

pipe, elbows, fittings, and sheet metal building products. These are distributed through heating and hardware jobbers in the territory west of the Mississippi River. Jobber activity will be continued.

Distribution will be directed by R. J. Miller as sales manager of the jobber department and R. C. Brainard as sales manager of the manufactured goods department.

WALTER R. STILES has been appointed chief engineer of the Premier Furnace Co., Dowagiac, Mich. He will direct development of new products as well as dealer engineering services.

Mr. Stiles had previously been chief engineer of Hall-Neal Furnace Co., Indianapolis, Ind. He served in the Army in World War II and graduated from the University of Illinois School of Engineering.

W. R. Stiles

J. C. Carman

SALES MANAGER FRANK GIBBONS of Viking Air Conditioning Corp., Cleveland announces the appointment of John C. Carman as Viking's new representative in Michigan, northern Indiana and northwestern Ohio.

Mr. Carman joins Viking with 12 years' experience in the heating field, having been an employee and officer of the Detroit Heating Co. since 1936. During that period he also became familiar with the heating business in much of the territory in which he will represent the Cleveland manufacturer of furnace blowers, humidifiers and ventilating fans.

WITH MORE THAN 1,500 customers and friends in attendance, Chicago Steel Service Co. officially opened their new general offices and warehouse at an open house on October 18.

Located on Kildare Avenue at 45th Street in Chicago's central manufacturing district, the one-story steel frame structure covers 120,000 sq ft and was built at a cost of $1,500,000.

Known since 1925 as the House of Stainless, the company has installed the latest type equipment for materials handling and the processing of orders for special shapes and sizes of both stainless and carbon steels. New service facilities include five heavy-duty overhead cranes, a battery of shears, automatic hack-saw equipment, high-speed friction saw and a 4-torch plate burner with an electronic tracing device.

The company warehouses and distributes steel products in Illinois, Wisconsin, Indiana, Iowa, Minnesota, Michigan, and parts of Kentucky. Officers are Walter D. Monroe, Jr., president; Donald F. Grace, vice president and secretary; Thomas J. Carmody, vice president; and J. Hampton Monroe, treasurer.

HOW MUCH BETTER ARE

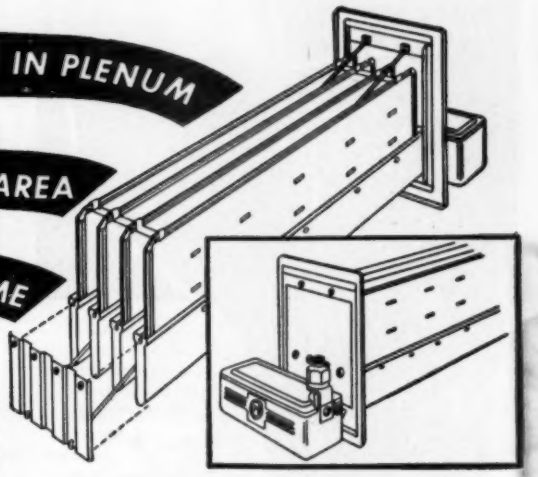
MAID-O'-MIST CONVECTOR HUMIDIFIERS

. . . for you . . . for your customers?

60% LESS AIR RESTRICTION IN PLENUM

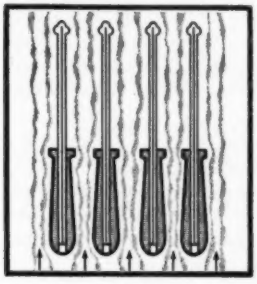
30% MORE EVAPORATION AREA

50% LESS INSTALLATION TIME



AMAZING DESIGN DOES IT

Maid-O'-Mist's exclusive individual trough design allows the heated air to flow freely up between the evaporator pads. There's no old fashioned flat bottom pan to block the flow of heated air and reduce efficiency in small plenums. The entire area of each of the large evaporating pads is in direct contact with the warm air flow, thus providing 30% more evaporating area. Maid-O'-Mist Convector Humidifiers reduce air restriction to a minimum and at the same time provide this greater evaporating area. That's why Maid-O'-Mist exclusive design is ideal for the small plenums of all modern warm air furnaces.



READY TO INSTALL

Maid-O'-Mist Convector Humidifiers come completely assembled. All you do is cut the proper size opening in the plenum and attach the plenum flange frame. Slip in the factory assembled unit and make the necessary water connections. That's all.

Remember . . . . Maid-O'-Mist's advantages mean more profit for you. Make every installation a Maid-O'-Mist Convector Humidifier. Get full information from your jobber or write for Bulletin 701-B.

13 DIFFERENT SIZES AVAILABLE

Maid-O'-Mist Convector Humidifiers have evaporation capacities of 1 to 10 gallons of water per day, depending on size. Made entirely of non-ferrous metal and equipped with automatic (float-operated) supply valve. Design permits adjustment of up to 30° pitch for sloping bonnet furnaces.

MAID-O'-MIST Inc.
HEATING SPECIALTIES

AUTOMATIC HUMIDIFIERS . . . . . AUTO-VENTS
WATER LINE CONTROLS . HEATING SPECIALTIES

MAID-O'-MIST, Inc.

3217 NORTH PULASKI ROAD . CHICAGO 41, ILL.

RCS SUPER SAW

AIR COOLED

Saves you more time than any other tool in your kit

A Journeyman's tool, built to stand up under constant, on-the-job Contractor or Industrial use.

★

Built-in Blower—Anti-friction replaceable bearings—No starting hole needed—Blades to cut all materials—Fits any heavy duty ¼" or ⅜" drill.

Super Saws and Blades are listed on Federal Supply Schedules, Class 40 Material.

Cutting opening in oak flooring in less than 3 minutes—no starting hole needed!

MAIL TODAY!

RCS TOOL SALES CORP.
JOLIET, ILLINOIS

Gentlemen:
Please send us Bulletin A-12 and name of the nearest Super Saw distributor.

Name_____

Address_____

City_____ Zone_____ State_____

THE APPOINTMENT OF Frank B. Persson as special representative for the Janitrol domestic-commercial space heating division, Surface Combustion Corp., is announced by H. C. Gurney, sales manager.

Mr. Persson will represent this Toledo firm in all types of government and military installation contacts on installations requiring space heating equipment.

A graduate of Stout Institute with a BS degree, Mr. Persson is also a Navy veteran of World War II. He has spent the last five years as sales engineer with Lennox Furnace Co. where he was engaged in sales and service on all types of space heating equipment.

Mr. Persson will maintain his office at 3190 East 33rd St., in Tulsa, Oklahoma.

F. B. Persson

H. W. Milner

J. N. CRAWFORD, director of sales, recently announced the appointment of H. W. Milner to the post of manager, special accounts division. Mr. Milner will maintain his office at Bryant Heater Division's headquarters in Cleveland, Ohio.

Mr. Milner comes to Bryant with a long background in the gas industry including service with government administrative agencies during World War II, vice president in charge of sales, Heating Research Corp., and sales manager, domestic heating division, Stewart-Warner Corp.

AIR-MAZE CORP., Cleveland, Ohio, has purchased the Detroit Air Filter Co. of Woodstock, Illinois.

Manufacture of Detroit, Arco and Dustay filters will be continued at Woodstock. The filters are of the throwaway type and incorporate wick action as a method of holding more adhesive on the filter media.

GORDON J. MALONE of Philadelphia has been named eastern regional manager for Servel refrigerators, water heaters and air conditioners. The promotion was announced by John K. Knighton, vice president in charge of sales for Servel, Inc., of Evansville, Indiana.

Servel's eastern region includes Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Deleware and Maryland, the District of Columbia and parts of Ohio and West Virginia. Headquarters are in New York.

Mr. Malone succeeds George R. Copeland, who recently resigned. He has been with Servel since 1936, first as an advertising and sales promotion representative, and for the past six years as district sales manager in the Philadelphia area.

Mr. Malone, a native of Portland, Me., was a Navy

DRAVO *Counterflo* HEATERS

have a certified High Standard of Safety!

ALL STANDARD MODELS, BOTH GAS-FIRED AND OIL-FIRED, LISTED BY UNDERWRITERS' LABORATORIES, INC.

ALL GAS-FIRED STANDARD MODELS APPROVED BY AMERICAN GAS ASSOCIATION.

ACCEPTANCE BY FACTORY MUTUAL ENGINEERING DIVISION OF DRAVO STANDARDIZED SAFETY CONTROL CIRCUIT.

DRAVO HEATER SAFETY MEANS SAVINGS FOR YOU

Because they have this safety approval, you'll find you can obtain the lowest-possible insurance rates with Dravo *Counterflo* Heaters. These savings represent only part of the many savings you get with Dravo warm-air Heaters. For instance:

DRAVO HEATERS OFFER YOU . . .

- low initial cost . . . savings up to 60% on installation
- concentration of heat at working levels
- 150-foot air throw . . . no duct work required
- flexibility . . . units can be mounted in any position on floor, wall or ceiling
- automatic operation . . . on-off or modulating controls
- long service life . . . low maintenance . . . stainless steel combustion chamber eliminates refractory lining
- mobility . . . can be moved easily to any location
- low fuel consumption . . . direct-fired . . . burns gas or oil . . . readily converted

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These versatile heaters are ideal for commercial and industrial use in foundries . . . warehouses . . . machine shops . . . stores . . . schools . . . churches . . . process industries . . . and many others. Why not look into the possibilities of Dravo Heaters for your heating and ventilating needs? Write today for Bulletin No. QR- 26-8091.

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HEATING DEPARTMENT
Dravo Bldg., Fifth & Liberty Ave.
PITTSBURGH 22, PA.

ATLANTA • BOSTON • CHICAGO • CLEVELAND • DETROIT • NEW YORK • PHILADELPHIA • PITTSBURGH
Sales Representatives in Principal Cities

Manufactured and sold in Canada by Marine Industries, Ltd., Sorel, Quebec

Export Associates: Lynch, Wilde & Co., Washington 9, D.C.

officer in World War I and a civilian refrigeration engineer in the Caribbean Base Command in World War II. He will be succeeded as Philadelphia district sales manager by Ray J. Pask, who has been manager of Servel's Detroit sales branch since its opening in March, 1950. Mr. Pask has been with Servel for 13 years — first as a sales promotion representative and later as a district sales manager.

A native of Milwaukee, Mr. Pask was graduated from the Armour Institute of Technology in Chicago and before joining Servel spent 15 years in the Chicago area as a consulting engineer and as an appliance retailer.

IN KEEPING WITH a continuous expansion program, Norman Products Co., Columbus, Ohio, has acquired a new, modern machine tool and die plant adjacent to their main plant.

Officials of Norman announce that the 10,000 sq ft of floor space in the new plant will be devoted to tool and die and machine production. The plant is fully equipped with modern and efficient turret lathes, vertical precision milling machines, horizontal milling machines, internal, external and centerless grinders, engine lathes, tappers, drill presses, hack saws and automatic screw machines.

Norman addition

It is here that the Norman Products Company's defense contract division will be operated by superintendent of the contract division Charles Rauch. The facilities will be of great future benefit to Norman in its increased production of the famous Three-Sixty overhead unit heater, custom built conversion burners, the twin-fuel burner and Southerner furnaces, according to officials.

FELIX WENGERTER has been appointed district manager of the New York branch office for General Controls Co. of Glendale, California, it was announced by J. F. Ray, vice president in charge of sales.

Mr. Wengerter's new position entails complete charge of all New York and Newark branch office territory activities, including sales engineering and service of the General Controls' broad line of automatic controls.

DON YOUNG, director of sales for the Day and Night division of Affiliated Gas Equipment, Inc., recently made several important sales appointments.

Frank Spratt has been assigned as Southern California sales manager for the company. The Sales Executive Club of Los Angeles honored Mr. Spratt by naming

Plan For More Jobs, Bigger Income—

●

Get Both With a Super Red Streak

All you need to handle more customers and earn larger profits is the powerful new Red Streak Model SH. This advanced, sturdy furnace cleaner with its special tools enables you to clean heating plants hot or cold, faster, easier and more thoroughly—"Once Over Does It".

Super cleaning helps you sell conversions, new parts, repairs and replacements—while you add to your income by cleaning all kinds of heating plants. People gladly pay for a service that cuts fuel bills and brings more comfort.

The Super Red Streak Model SH is equipped for both wet and dry pick-up, easily cleans debris from flooded basements, cleans boiler tubes and air filters. Can be quickly and easily converted to a blower. Oil burner cleaning becomes an easy job with the special Super oil soot filter bag. Super chimney cleaning tools work safely from the basement—not the roof.

The FREE SUPER SALES PLAN BOOK, sent on request, tells you how to build a furnace cleaning business that will increase your income as fast as you want it to grow.

●

Your wholesaler can give you complete data on the Super Red Streak SH or write direct to us. Sales and service in principal cities.

Super Red Streak Model SH—The heavy duty cleaner that does everything.

NATIONAL SUPER SERVICE COMPANY, INC.
1944 N. 13th St., Toledo 2, Ohio

"Once Over Does It"

SUPER SUCTION

SINCE 1911

"THE DRAFT HORSE OF POWER SUCTION CLEANERS"

you can do *This Work* with type 430 stainless

In normal times, sheet metal shops use Armco 18-8 Type 302 Stainless Steel for restaurant equipment. But you can't do it today because of defense restrictions.

Only the chromium grades are available for these jobs. So sheet metal men are turning to Armco 17 Type 430 Stainless for many restaurant applications.

USE IT HERE

Type 430 should prove satisfactory for table and counter tops, under-counter work surfaces, hoods and canopies, sinks and steam tables, back-bar splashes and soda fountains. In all cases the stainless should be cleaned frequently to make sure of its bright appearance and resistance to corrosion.

NOT A "CURE ALL"

Unfortunately, Type 430 cannot always be used as an alternate to Type 302. Its corrosion resistance and fabricating qualities are not equal to the chromium-nickel grades in all applications. But many difficult forming and drawing operations can be done with slight changes in fabrication practice.

You can quickly find out whether or not Type 430 will prove satisfactory for the equipment you make. Just write your nearest Armco Distributor for a copy of the new folder, "Where to Use 17 Chromium Stainless." It lists a group of recommended and unsatisfactory applications.

Armco Steel Corporation

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ARMCO

2 NEW CHASE FLASHING PRODUCTS YOU'LL WANT TO KNOW ABOUT

CHASE ONE PIECE THRU-WALL COPPER FLASHING AND CAP FLASHING RECEIVER

Here are two new Chase Flashing products that will help you do a better job, faster.

The unique full weight copper Thru-Wall Flashing bonds in *all* directions. It has an integral cap flashing receiver that permits the easy installation of cap flashing *after* the base flashing and roof are installed. No wedges are needed to keep the receiver open.

CHASE COPPER BASE FLASHING EXPANSION JOINT

The new patented Chase Copper Base Flashing Expansion Joint now makes copper base flashing even more efficient. Failure of the copper due to expansion and contraction is prevented, since these joints absorb such movement in the base flashing.

FREE FOLDERS
Send coupon below for free folders on both of these new Chase Products.

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CHASE 75th ANNIVERSARY 1876 1951

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Please send me free descriptive literature on

☐ *Chase Thru-Wall Copper Flashing and Cap Flashing Receiver.*

☐ *Chase Copper Base Flashing Expansion Joint.*

Name_____ Position_____

Firm_____

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City_____ State_____

him one of the country's outstanding salesmen of last year. Having represented Day and Night in the mid-west for the past few years, Mr. Spratt now returns to his native California to take over this important position.

Jim Buster has now been assigned as sales representative for Day and Night in the mid-west territory, and will have his headquarters in Tulsa, Oklahoma.

John Lyons has been appointed sales representative for the Day and Night Pacific northwest territory. He is well known in that territory, having worked for the Pacific Coast Heating and Appliance Co. of Portland, Oregon, before accepting this new sales position.

TWO NEW EXECUTIVE APPOINTMENTS in the Airtemp Division of Chrysler Corp. have been announced by C. E. Buchholzer, Airtemp president.

J. F. Knoff, who has been assistant general sales manager, was named general sales manager to take the place of C. S. Stackpole who recently resigned from the company.

T. B. Hollencamp, former supervisor of service, was named national service manager.

Mr. Knoff has been with Airtemp for six years. He joined the division in 1945 as a district representative in the New Orleans region. He became regional manager there and later was transferred to Dayton as divisional manager in 1947.

J. F. Knoff

T. B. Hollencamp

In 1948 Mr. Knoff was named sales director and in 1950 assistant general sales manager, the position he held until his present appointment as general sales manager.

Mr. Hollencamp came with Airtemp in 1937 as a service representative. He became a technical writer in 1941 and in 1942 was made assistant service manager. By 1949 he was supervisor of service, from which position he moved into his present post.

A native of Xenia, O., Hollencamp attended public schools there and Miami University (Ohio).

CENTRAL-WEST MACHINERY CO., 335 S. Western Ave., Chicago, Ill., distributors of sheet metal working machinery and ventilation supplies, has announced that T. A. Johansen has been elected president of the company. Nils A. Lindvall is vice president and Frank V. Kassel is vice president and treasurer.

Mr. Lindvall, formerly president of the firm, is 73 years old and well known throughout the trade due to his many years of work in sales and development of metal working machinery. Though still active in the

GET YOUR FREE COPY!

● This new 20-page booklet provides many useful how-to-do-it ideas for both amateurs and professional mechanics, as well as basic information on the proper selection, use and care of hand tools. It contains 46 action illustrations and describes and illustrates 47 popular Crescent and Crestoloy Tools.

Simply fill in and mail the coupon below, and a copy will be sent to you with our compliments.

CRESCENT TOOL COMPANY
JAMESTOWN, N. Y.

WRENCHES . . . . . and how to use them

A prime rule in using any adjustable wrench is to first adjust it to a snug fit on the nut to be turned. (Fig. 7.) A tightly adjusted wrench is safer since danger of slippage is minimized. A loosely fitted wrench will tend to "round" the corners of hexagonal objects, and may damage the wrench by exerting undue strains on the jaws. Greasy, oil-covered tools are dangerous. Keep handles clean and dry by occasional wiping. Oil should be applied sparingly to moving parts.

Fig. 7

Adjustable Wrenches develop their greatest strength when hand pressure is applied to the side of the wrench carrying the fixed jaw as in Fig. 8. They can, however, be pulled in either direction on moderate loads, and are frequently "flopped" between

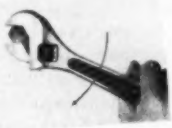


Fig. 8

swings to gain an angular advantage and permit continuous rotation of nuts or bolts where cramped quarters limit the handle swing.

"Crestoloy" Wrenches, being thinner (and stronger) than "Crescent" Wrenches, are the preferred tools for use in cramped quarters or when adjustable wrenches are used in pairs as in Fig. 9. For extremely heavy loads, Crestoloys are likewise recommended. (See tools illustrated page 15.)

Fig. 9

PLIERS . . . . . and how to use them

Slip Joint Pliers

Crescent Slip Joint Pliers are a general purpose tool having excellent gripping power over a wide capacity range because of their adjustable jaws. Ideal for holding or turning round pieces. Should not be used on nuts or bolt heads. (See tools illustrated page 15.)

Fig. 10

Skinning Insulated Wire

Fig. 12 illustrates the proper way to grasp a light, diagonal plier. The third and little finger "inside" the handles provide pressure to hold the jaws apart. Pressure of the thumb stabilizes the tool and maintains desired jaw opening.

To skin wire, grasp it as shown with the left hand, as in Fig. 11. Now with plier held, as shown, close the jaws sufficiently to cut through the insulation *only*. Don't cut through the conductor!

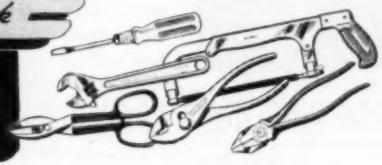
Fig. 11

Now "rock" plier handles toward left wrist and the prying action will strip the insulation from the wire end.

"Cleaning" or brightening of the bare wire is shown in Fig. 12. Close jaws just enough to provide slight pressure and draw cutter blades along the bare wire a few times. Rotate wire with left hand so that the entire circumference is clean. (See tools illustrated page 17.)

Fig. 12

CRESCENT TOOLS
Give Wings to Work
Sign of the Artisan
Symbol of Excellence



"Crescent" is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by Crescent Tool Company, Jamestown, N. Y.

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- real user appeal
- long trouble free life
- ease of application

on these products you manufacture
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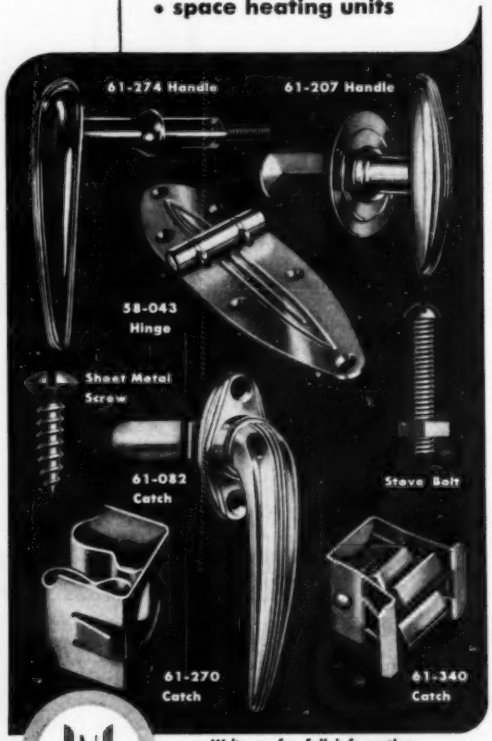
- humidifiers • oil burners
- space heating units



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NATIONAL LOCK COMPANY

ROCKFORD • ILLINOIS

company, he serves now principally in an advisory capacity.

Mr. Johansen, succeeding Mr. Lindvall as president, and Mr. Kassel have both long been associated with the Company.

APPOINTMENT OF Arthur Theobald, as chief engineer for Sequoia Manufacturing Co. of San Carlos, Calif., has been announced by President Robert Kramer.

Mr. Theobald, for 26 years associated with the Payne organization, already has taken over his new duties at Sequoia.

Arthur Theobald

Sequoia's new chief engineer is a native of Utah and an alumnus of Brigham Young University. He was with Payne from 1922 to 1948, much of that period as its chief research engineer. For the past three years he has managed an air conditioning firm in El Paso, Texas.

THE CHICAGO DISTRICT office of the Emerson Electric Mfg. Co. has recently moved to larger quarters. New location is 1623-25 S. Pulaski Road, Chicago, Illinois.

All warehouse and office operations are consolidated in the new and larger quarters and facilitate delivery and shipment of fans and motors. T. J. Egan continues as Chicago District Manager.

OVER 1,000 people from Altoona, Duncansville and Hollidaysburg, Pa., as well as guests from various parts of the country, attended an open house in the new Duncansville plant of the National Radiator Co. on Thursday, October 18.

The occasion was the dedication of the company's new $1,250,000 sheet metal fabricating plant, which was formally opened on almost the same spot where Andrew Carnegie once worked as a railroad telegraph operator.

The crowd, heard Benjamin F. Fairless, president of the United States Steel corporation; Hon. David M. Walker, secretary of the Department of Labor and Industry of Pennsylvania; and Robert S. Waters, president of National Radiator, in addresses which were broadcast by four radio stations. The speakers paid tribute to opening of the new plant as an important event in the industrial development of the Greater Altoona area and the metal working industry.

Although the plant is not yet completely equipped, the

visitors saw the paint applicator system, drying ovens, steel washing unit, press brakes, shears, and other machinery, as well as the plant offices, dispensary, employee locker rooms, and special displays of National Radiator products.

At a press conference which preceded the dedication ceremonies, B. T. Hain, vice president for manufacturing, said the new plant would eventually employ approximately 500 people, providing a force sufficient for at least two shifts.

J. DONELLA, president of the Swirling Oil Burner Mfg. Corp., manufacturers of the Swirling Flame line of oil burners, has just announced the appointment of A. R. Birkins as sales manager.

Mr. Birkins has been associated with the heating and plumbing industry for the past 25 years. He will guide the sales efforts of the firm's line of vertical, high pressure, atomizing oil burners.

A. R. Birkins

E. O. Pearson

THE ROTEX PUNCH CO., Oakland, Calif. manufacturers of the Quick Change Turret punch press, has announced opening of a second plant location at 5215 E. 12th St.

Both industrial and government activity demands have made it necessary to add this 7,000 sq ft to the company's facilities. It is devoted to office space, assembly, warehouse, and shipping.

Earl O. Pearson, owner, reports the company will add a new power model punch press to the line after the first of the year. This foot operated Rotex power punch will rapidly increase the operator's production score with such sheet materials as sheet metal, plastic, fibreboard, cardboard, etc.

APPOINTMENT of William W. Timmis, Jr., as southern sales and service manager for Dravo Corp.'s heating department has been announced. Mr. Timmis will supervise the activities of this department in the southern territory. Headquarters will be located at 800 Peachtree St., N. E., Atlanta, Georgia.

Mr. Timmis is a resident of the city of Atlanta and well known to the building trades and architectural groups. He is married to the former Martha Ann Blalock of Atlanta and has two children.

JOHN H. HARRISON, a native of Waco, Texas, has been appointed a sales supervisor in the Southwest District of York Corporation, according to an announcement made by the air conditioning and refrigeration firm's home office at York, Pa.

Mr. Harrison, who succeeds L. B. White, had been associated with the Wells Manufacturing Corp. in a

Ingersoll

HEAT-RESISTANT STAINLESS STEELS GIVE ALL FOUR!

-when used for Combustion Chambers

1. MORE QUIET BURNER OPERATION
2. CLEANER HEAT
3. BETTER TEMPERATURE CONTROL
4. CONSIDERABLE SAVINGS ON FUEL COSTS

If you are using or contemplating the use of heat-resistant stainless steels for combustion chambers for oil burner furnaces, we are specialists in producing these types of steels. Whether you are a large or small user of these steels our steel making facilities can offer exceptional service by especially shearing to your specified combustion chamber steel blanks, or multiples thereof. Write us for additional information.

B/W

Ingersoll STEEL DIVISION

BORG-WARNER CORPORATION

310 South Michigan Avenue, Chicago 4, Illinois

Plant: New Castle, Indiana

similar capacity. He attended Baylor University and in 1948 and 1950 served as a director of the Waco Junior Chamber of Commerce.

The southwest district of York Corp., with headquarters in Houston, Texas, includes the states of Texas, Alabama, Mississippi and Louisiana.

A LITTLE OVER two years ago, the Coleman Co. of Wichita, Kansas, manufacturer of home heating equipment, introduced Blend-Air, an innovation in warm air heating. When the 50,000th unit came off the line, it represented a significant production achievment in view

of the newness of the Blend-Air concept and material shortages caused by the defense effort. Sheldon Coleman (left), president and general manager, dipped into a hat held by Clarence Coleman, vice president in charge of production, to determine which of Coleman's 65 wholesale distributors would receive the 50,000th prize package. It went to Buhl Sons Co. of Detroit, long-time distributor of Coleman heating equipment.

THE APPOINTMENT OF two additional members to the sales department of Remington Air Conditioning, division of Remington Corp., Auburn, New York, has been announced by Herbert L. Laube, president.

Anthony G. Masiello has been appointed assistant to the general sales manager and C. Kenneth Juno has assumed the duties of advertising manager. In making known these appointments, Mr. Laube stated that the

A. G. Masiello

C. K. Juno

manufacture and sale of the Remington line of room air conditioners had increased substantially in 1951, and the creation of these new positions would enable Remington to market more efficiently an anticipated further increase in 1952. Less than a year ago Reming-

BUY the DIFFERENCE
. . . at No Extra Cost

Only Airsan offers you ALL these Filtering features —

- *Galvanized steel frames*
- *Bronze welded corners*
- *Drain slots for quick, easy cleaning*
- *Expanded metal face plates act as lint arrestors*

Airsan Air Filters are viscous type, permanent and cleanable. Write for free bulletins. "AIRSAN" is Reg. U.S. Pat. Off.

Air Filter Corporation
108 A NORTH WATER ST. • MILWAUKEE, WIS.
Canadian Representative
DOUGLAS ENGINEERING CO., LTD., MONTREAL
A Few Distributorships Available. Write for Details.

ton moved to new and larger quarters in Auburn that provided for expanded manufacturing activities and modern assembly production. This increase in production and sales has required a greatly expanded program in both plant and office.

Mr. Masiello comes to Remington with a background of 12 years in the air conditioning field. A native of Syracuse, he joined the Carrier organization in 1939. After spending considerable time in various departments of the main office, he joined the home office sales staff, in 1946. After two years Mr. Masiello was transferred to the Philadelphia office as manager of self-contained unit sales for this district. In his new position with Remington he will serve as assistant to E. A. Bonneville, general sales manager.

C. Kenneth Juno has had some 12 years experience in the advertising field. A native of Auburn, he was formerly assistant to the advertising manager of the Columbian Rope Co. He has had wide experience in the hardware, marine, and home furnishings fields. Mr. Juno has been associated with Remington for the past three months and has been instrumental in setting up Remington's new advertising department. His duties will include supervision of the overall Remington advertising program which will bring him into direct contact with Remington's national distributorship.

WILLIAM B. COOPER has been appointed to the newly created position of sales manager of engineered products for American Radiator & Standard Sanitary Corp.

Mr. Cooper will head a new department handling the sale of air conditioning, cooling and specialized heating equipment.

Mr. Cooper, a graduate of Ohio University, has a broad background in the engineering and sale of air cooling equipment. He is a member of the American Society of Heating and Ventilating Engineers and the American Society of Refrigerating Engineers.

W. B. Cooper

W. Bynam

THE ELECTION OF William Bynam as executive vice president of Carrier Corp. was recently announced by Cloud Wampler, president.

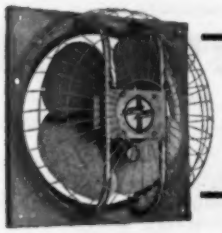
Mr. Bynam was formerly vice president and general sales manager. He joined the Carrier organization in 1930, after graduation from the University of Alabama and from Alabama Polytechnic Institute, where he specialized in electrical engineering. From 1931 to 1945, Mr. Bynam served in engineering, sales and management capacities in the south and midwest.

FOR EXHAUST VENTILATION OF COMMERCIAL SPACES

Peerless Electric

EXHAUST FANS

With dependable Peerless Electric construction throughout, Peerless Electric Exhaust Fans do an excellent job of ventilating tailoring and cleaning plants, taverns, kitchens, restaurants, retail stores, and similar establishments. These fans are completely designed and manufactured by The Peerless Electric Company, manufacturer of motors, fans and blowers since 1893.



Fan with Inlet Guard

MOTORS

Long hour duty permanent split capacitor type.

CONSTRUCTION

The sturdy steel panel mounting simplifies installation and neatly covers the wall opening. Entire fan is finished in attractive Hammerloid baked enamel. Furnished with or without inlet guards and with or without controllers.

RATINGS

Rated in accordance with Standard Test Codes.

Write for complete specifications and prices

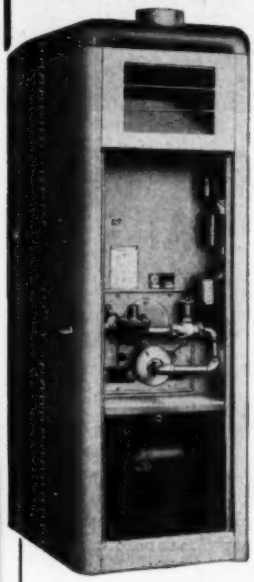
THE PEERLESS ELECTRIC COMPANY

Established 1893 • *WARREN, OHIO*

Peerless Electric

MOTORS • FANS • BLOWERS

HI-BOY or LOW



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The remarkable new

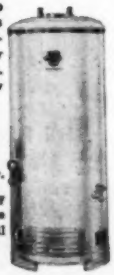
SECURITY

MODEL SFA FURNACE

Security leads the trend to compact efficiency with the new SFA Series. Adaptable to every domestic winter air conditioner situation. Versatile enough for conventional, basementless or utility room installations. Completely engineered for effortless, automatic heating. Yes, sir . . . the SFA brings greater economy and longer life to home heating!

Only Two Connections Necessary

Completely assembled at factory. Hook up just one gas and one power line! Filter racks optional at bottom, right or left. Each control can be removed without disturbing other wiring. You'll be amazed at its versatility. Available for all gases. Write or wire now for complete information, prices.



SECURITY MFG. CO.

1630 Oakland St., Kansas City 3, Mo.

Also manufacture the famous Security Heavy Duty Water Heater and full Line of Gravity, All Purpose, and In A Wall Furnaces and Conversion Burners.

Riopelle —

(*From page 46*)

these rooms. The minimum total is therefore 4,700 cfm. A good choice of blower would be one in the 5,000 cfm range. For lengthy runs of ductwork, friction and resulting static pressures should be investigated. Blower equipment should be chosen which has capacity to handle the necessary volume at low speeds.

The ductwork branches are designed for a velocity of 750 fpm, the trunk at 1,200. The designer may from this point run the ducts according to the dictates of his experience. The accompanying illustrations show typical methods of designing the different parts to meet the terms of the code.

We have now taken in fresh air, provided for recirculation, and distributed the warm air. There remains but to rid the building of foul air. How much and by what method follows.

The volume of air to be exhausted shall be equal to the fresh air intake. In our example, at a rate of 1½ cfm per sq ft of repair floor area, the volume to be exhausted is 3,000 cfm. This volume of air shall be exhausted by gravity vent flues. (Mechanical exhaust is not acceptable because too often it is not in operation when needed, either through oversight or deliberately to save heat and fuel.) A gravity vent flue, on the other hand, is continuously functioning. No shut off damper is permitted in flues of this type.

Dimensions of the exhaust vent flue are determined by volume of air and permissible design velocity. Maximum velocity for design purposes is 500 fpm. In our example of 3,000 cfm, the aggregate cross sectional area becomes 6 ft or 864 sq in. One or more vent flues may be used to obtain this area. If two are used, for example, each may be 24 by 18 in. Each flue must run from a point near the floor line, approximately 12 in. above the floor, and run vertically through the roof. Each flue must be capped with an approved siphon type roof ventilator. The throat area of the ventilator shall be equal to the cross sectional area of the flue. The roof ventilator must be located at least 2 ft above the high point of the roof. Wind currents are trusted to perform the siphoning action.

So far, the furnace has not been located. This can be a matter of convenience, but wherever situated it must be enclosed in a fire-resistive room. The furnace room shall have walls of masonry at least 8 in. in thickness. The ceiling shall be a concrete slab in new buildings. In existing buildings the ceiling may be metal lath and plaster. The door shall be a metal clad self-closing fire door. If fuel oil or coal is to be stored inside the building, the furnace room or a room of equal construction shall be used for isolation.

When the plans have been completed, two sets shall be forwarded to the Wisconsin Industrial Commission for examination and approval. The plans must be supported by design computations and complete specifications. *No work on a heating installation may be commenced before state approval has been obtained!* An

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WITH SLIDING DAMPER CONTROL

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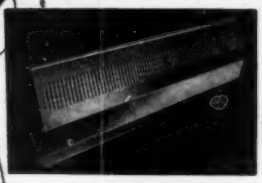

- Used in homes, schools, churches and commercial installations.
- Comes in four foot sections.
- Simplifies balancing of heating systems.
- Fabricated of 20 gauge steel.
- Finished with Prime Coat only—special finishes on request.

Standard Stamping & Perforating Co.

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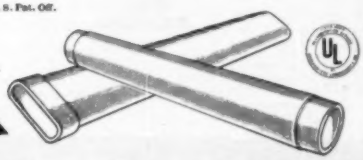
Attach this to your business letterhead and mail for new catalog.

Over 60,000,000 ft. in service!

Johns-Manville Transite* Flue Pipe has for nearly 20 years enjoyed a reputation for dependable, economical service in thousands of installations. Proof of its many practical advantages is shown by the fact that there are more than 60,000,000 feet of this asbestos-cement pipe in use!

For complete details, write for folder TR-84A. Address Johns-Manville, Box 290, New York 16, N. Y.

*Reg. U. S. Pat. Off.



Johns-Manville TRANSITE FLUE PIPE

FOR VENTING DOMESTIC GAS-BURNING APPLIANCES

approved plan must be kept on the premises and be made available to state or local building inspectors on request.

To some readers who do business in states having no heating and ventilating code or regulations, the "musts" and "shalls" used in this article and in the code herein referred to may seem rather harsh and restrictive. Perhaps so, but this code is law. It was written to prevent occupational hazards of garage employment. Wisconsin building owners are held responsible for compliance. There is also a statute under which the owner is protected against unscrupulous contractors. Under this statute, the owner may recover from the contractor the sum paid for any work which does not comply with the terms of the code. In addition, the owner may recover a sum sufficient to complete the heating and ventilation system in accordance with requirements of the code.

Clearly, the contractor who knows his business must also know his code, know his law, and know his design. The responsible contractor works from plans which have been state approved.

Obituary

Howard W. Pound

HOWARD W. POUND, 55, vice president and manager of the Air Filter Sales division, American Air Filter Co., Inc., Louisville, Kentucky, died October 10. He was a graduate of Purdue University, veteran of World War I, member of the American Society of Heating and Ventilating Engineers and an engineer of long experience in the air filter industry.

Radio Spot Commercials Spooner —

(*From page* 43)

these specifications and plans to the sheet metal shop for fabrication. When these are completed, the sales-engineer has all the materials assembled and loaded on a truck for delivery to the job. On the job, the sales-engineer follows through and supervises the installation.

"As a rule," says Mr. Wagener, "the sales-engineer is the only contact between the customer and the shop throughout the entire transaction. If the customer has any complaints, these are made to the sales-engineer. We pay our sales-engineers a high monthly salary and in addition they get a share of the net profits of the company over every 90-day period.

Little Salesman Turnover

"Because their earnings are high, our sales-engineers remain with us for long periods. This is a distinct advantage to us. If a complaint or an inquiry comes from a customer at any time, even several years after an installation has been made, we look up the records to see what sales-engineer put in the installation. If he is still with us, we send the same man back. He goes to the customer and addresses the housewife by name and says something like 'You remember me?' and her answer is usually, 'Yes, you're the man who put

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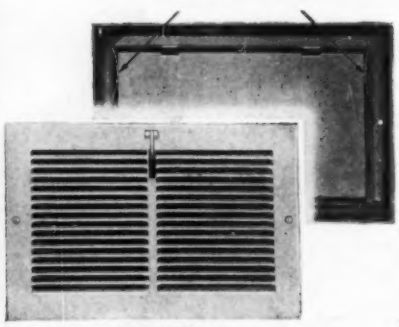
DOUBLE SPRING ACTION—
PROVIDES SMOOTH OPERATION
& AUTOMATIC TENSION TAKEUP



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SPENCER LOVE
Chairman of the Board, Burlington Mills

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Last call for the 1951 Defense Bond Campaign!

While the campaign was scheduled for six weeks, beginning Labor Day, the *accounting period* will include all Payroll Savings Plan bond purchases and enrollments in September *and October*.

If *you* haven't conducted a person-to-person canvass to put a Payroll Savings Blank in the hands of every man and woman in *your* company there is still time to join the thousands of companies which have added nearly a million employees to the Payroll Savings Plan through person-to-person canvasses.

Phone, wire or write to Savings Bond Division, U. S. Treasury Department, Suite 700, Washington Building, Washington, D. C. Your State Director will give you all the help you need—application blanks, posters, envelope stuffers, personal assistance.

Give your employees an opportunity to save for their future and at the same time, help to maintain America's economic security—put an application blank in their hands.

Results of a few recent person-to-person canvasses

Firestone Tire and Rubber Company (40,000 employees), 87% participation; Universal Atlas Cement Company, 67.8% of 4,789 employees . . . Martha Mills, 71% of 2,200 employees . . . Lit Brothers, 52% of 3,600 employees . . . Delta Air Lines, 65% of 2,100 employees; Aerojet Engineering Corporation, 78.1% of 2,000 employees . . . Brown-Lipe Chapin Division of General Motors, 87% of 1,750 employees; Fabricast Division, General Motors, 85% of 1,700 employees.

Person-to-person canvasses now under way include:

	Number of Employees
28 Major Railroads	993,142
Radio Corporation of America	40,000
Owens-Illinois Glass Company	25,000
Cudahy Packing Company	17,000
Pacific Gas and Electric	17,000
Willys-Overland	6,750
Owens-Corning Fiberglas Corp.	6,500
White Motor Company	6,500
Fruehauf Trailer Company	5,700

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WHITNEY METAL TOOL COMPANY
91 FORBES STREET, ROCKFORD, ILLINOIS

in our heating installation.'

"Our shop is engaged mainly in fabricating sheet metal for heating plants, gutters, downspouts, ventilators, and ductwork. We have a shop foreman who supervises a group of mechanics who do shop work only. Then there is another group that does nothing but outside installation work. Our shop is equipped with a good variety of sheet metal equipment, including many power-operated machines.

"A basic principle of operation in our shop is a minimum of handling, resulting in a better grade of production. Extra pains and expense have gone into the most modern type of lighting in our shop—cold cathode tubes. The roof of our shop is perfectly flat and an inch of water is kept on it during the summer months.

Gutter Bench

"One of our unique methods of fabricating gutters involves a long narrow bench where these are fabricated by the use of mitres to the exact measurement required for erection. Downspouts are fabricated in like manner."

The principal equipment in the shop includes three sheet metal brakes, 4, 8, and 10 ft long; three sets of slip roll formers, two of 30 in. and one of 36 in.; two bar folders, of 30 in. and 36 in.; a full set of hand turning machines; a Pittsburgh lock former; a spot welder; angle iron cutters and benders; and acetylene and arc welding equipment. All machines are kept in good repair and only prominent makes known to the sheet metal trade are purchased.

The big front windows and the cold cathode lighting tubes furnish adequate light. Work benches are arranged to take advantage of the greatest amount of light possible. Some of these have rollers so they can be moved to any location needed. Two work benches in front are placed at right angles to each other in order to take full advantage of the light from the windows.

The shop has its own toilet facilities, together with racks for hanging of garments.

A feature much appreciated by all employees is a refrigerator full of soft drinks during every working day. These are available without charge to all workers.

The basement and second story of the original building are used as warehouses for standard furnace fittings that are commonly used with shop fabrications.

Back of the store and shop is another two-story brick building built years ago for a barn. The second floor and part of the first floor are used for warehousing standard rain carrying equipment. In addition, there is another warehouse at a different location.

The conveniences apparent in other parts of the store and shop are carried out in the office. The office is supplied with several desks, letter files, computation machines, drawing board for engineers, and other modern conveniences. An important feature is a visual display of records of all jobs under construction. A special open cabinet contains the cards on which the records of the jobs are kept. Any record is thus right

Youngstown Fittings invite

COMPARISON

Youngstown furnace fittings—finest in the field — are preferred by the trade because precision manufacture assure quicker . . . . more economical installations, vitally important in these days of shortages of both mechanics and materials. There is a Youngstown fitting for every job where an easy-assembled . . . quickly installed . . . practical furnace fitting is desirable. For installations that last . . . . Try Youngstown. Information or technical assistance will be gladly and quickly supplied.

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FURNACE COMPANY
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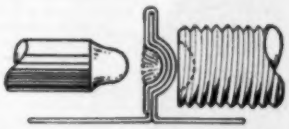
WHITNEY LEVER PUNCHES

No. 6 Punch

This Tool is especially adapted for Button Punching or for Templet work. Punch will strip where handle cannot be opened to 90 degrees.



These punches are often called Tip Punches, and are used to fasten standing seams without making a hole, by simply indenting the three thicknesses of metal.

W. A. WHITNEY MFG. CO
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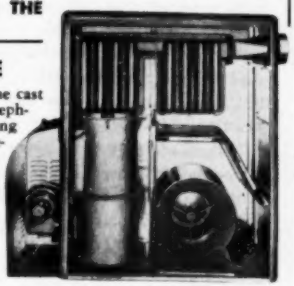
. . . know what the "SAW TOOTH" shape means to you?

YOU'LL SEE IT IN THE
ZEPH-AIR
OIL FURNACE



The saw tooth shape of the cast iron radiators in the Zeph-Air gives far greater heating surfaces with minimum restrictions to even flow of heat, provides maximum vertical heating surfaces, which are most important surfaces for heating efficiency. Every possible degree of heat from oil is consumed. When you can show your customers construction like this in a completely automatic warm-air furnace there's no doubt they will consider it the best possible buy for their money. They'll know that they're getting the most for the money in a Zeph-Air and they're sure, too, of completely automatic heat in the event of restrictions on other types of fuel. Write us today for literature and more information on the Zeph-Air line.

REMEMBER THAT EVERY ZEPH-AIR CARRIES A 20 YEAR WARRANTY

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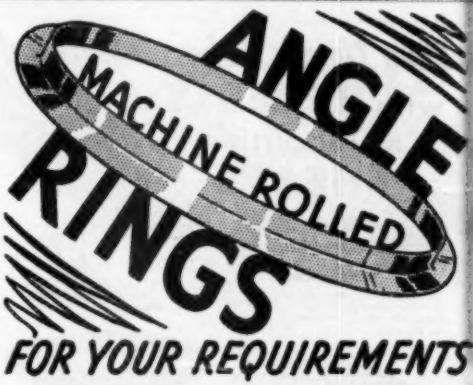

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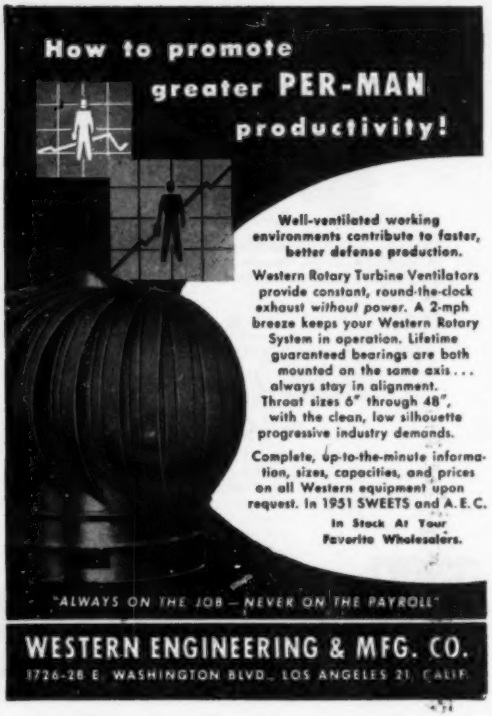
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Make any cut—straight, irregular, curved. Exclusive design permits turning work any direction while cutting. 4 models—cap. to 3/16".
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Makes cuts up to 8" inside edge of sheet. Sharp, clean burr-free cuts always assured. Cap. 16 ga. High strength aluminum alloy body; H.C.H.C blades.
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New "SS" Series—easier cutting with compounded linkage. 3 models—cap. to 1/8"; trimming capacity to 1/16" mild.
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at the finger-tips and no search need be made for mislaid records.

A total of 20 persons is employed and all work happily together so that the work of every department is closely integrated with the other departments—one of the reasons why the Wagener concern installed 340 furnaces last year and did a total business of around $300,000.

Kruckman —

(*From page* 30)

vert to sheet steel they may, within reason, expand the production of their housing units. The NPA apparently regards the trailer in the light of a good emergency substitute for regular housing.

The trailer people also were given a small quantity of alloy steel, 50,000 pounds of stainless steel, 94,000 pounds of brass mill products, 86,000 pounds of wire copper and 15,000 pounds of copper base foundry products. A 27 ft trailer, under emergency conditions, is to be limited to 560 pounds of carbon steel for the framework; 18 pounds of copper and 300 pounds of aluminum, or 600 pounds of carbon steel sheets. Each trailer requires 7½ pounds of copper wire. NPA estimates that 65,000 trailers must be built in 1952; over 5,000 additional units are required for defense housing. The assembled ready-to-use trailer dwelling is sold at prices ranging from $2,800 to $7,500. It is authenticated by the government that more than 500,000 units are now in use all year round as residences in all parts of the country, housing almost 2 million people. Last year trailer sales exceeded $225,000,000.

Housing and Home Finance Agency was alloted 10,500 tons of structural steel for the first quarter of 1952 in the recent schedule announced by DPA. This constitutes 53.3 per cent of its requirements as filed with NPA. It is expected that self-certification reserves will take care of a very considerable volume of private construction which does not show in the HHFA tonnage. The quantity alloted to the HHFA represents approximately 100,000 units of public low-rent housing now under construction as well as 50,000 private multi-unit family dwellings under construction. The allotment permits a moderate number of new starts in all housing areas under HHFA jurisdiction. It is interesting to find that NPA's building materials division, which requested 113,304 tons of structural steel, was awarded only 4 per cent of this volume. On the other hand, NPA's general industrial equipment division, which asked for 82,000 tons, received 70,000 tons, or 85 per cent of its application. The Atomic Energy Commission was the most successful applicant. It asked for 36,534 tons and received 36,500 tons, or 99.9 per cent of its stated requirement. The Department of Defense was given 171,000 tons, constituting 88.9 per cent of its request. Schools were given 48 per cent of their stated requirements, and hospitals 58 per cent, while the Veterans Administration was given 72 per cent of its stated requirements. Con-

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One sure way to KEEP down job time is to check on the time spent in assembling warm and cold air runs. If it's excessive according to accepted standards then you'll do well to change your source of fittings.

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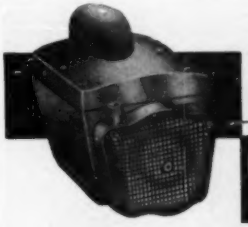

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struction machinery was alloted only 36 per cent of the quantity for which it applied. The Rubber Division was the only applicant to receive 100 per cent of its stated requirement. Automobiles — classified as motor vehicles — were given an allocation of 15,000 tons, which is 89 per cent of what they asked for. Farm machinery and implements received 16,000 tons, 64 per cent of its needs.

Sheet Metal Contractor —

(*From page* 51)

room stock are also increasing as more people become aware of the establishment.

"Despite the appreciable gains we've made as a direct result of the new building, we're fully aware that no type of structure insures success in the sheet metal business," comments Leon Lefebvre. "An impressive front will attract prospective customers, but you've got to deliver the goods in order to keep them. That's why we insist on good mechanics who will do their best on every job. We don't use helpers, because 90 per cent of our work is custom built and it's actually more economical to have the journeyman who lays it out handle everything."

Experience shows that the most efficient crew for the shop is three journeymen. There have been as many as eight on the payroll, but a force of this size didn't work out effectively. The partners try to do everything possible inside, and one of them goes out on every job done in the field. They find that their presence gives the journeymen more confidence and also pleases the customer.

Customers who visit the showroom park their cars in an adjacent lot. And a great many of them walk through the side door into the shop instead of entering from the sidewalk. Although 75 per cent of the firm's business is done with commercial accounts, the remaining customers represent a considerable number of homeowners.

Because of the high quality work done by L & S these are usually professional men. And the partners need make no apologies to the doctors and lawyers who pass through the working area. The shop is almost as neat and clean as the showroom, even if it is not finished off to accommodate visitors.

The crew has good equipment with which to work and plenty of space for all activities. Lefebvre and Soneff know that the front end is a big drawing card, but they don't let it completely overshadow the rest of the business.

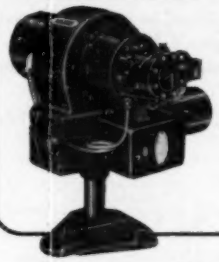
Reid-Pattern Development —

(*From page* 55)

is *PR*. With *R'* as center and the intersection points of extended lines drawn from the equally spaced points on line *R'-Z* as radii, draw arcs to intersect the half circle and number the points *1,2,3,4,5,6,7*.

5. From the intersection points numbered *2,3,4,5,6* on the half circle, draw lines parallel to the pipe center line and intersecting the pipe diameter line marked *P'P'*.

ANCHOR Oil Burners



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"Bett-Marr cuts 550 more 16C ells an hour"

Says a Minneapolis sheet metal boss. "In fact, we now cut all ductwork pieces 6 to 12 times faster than by hand with the BETT-MARR saw."

BETT-MARR cuts 50 to 70 stacked galvanized sheets at speeds up to 15 inches per minute. This 14-inch ball-bearing band saw cuts metals, plastics, wood, iron and steel castings and forgings.

- Smooth, powerful chain drive with blade speeds quickly adaptable from 125 FPM to 220 FPM.
- Positive blade control. Case hardened guides with carbide back-up bearing assure cutting accuracy.

PRECISION BUILT — Yet it costs little more than a home-workshop power saw.

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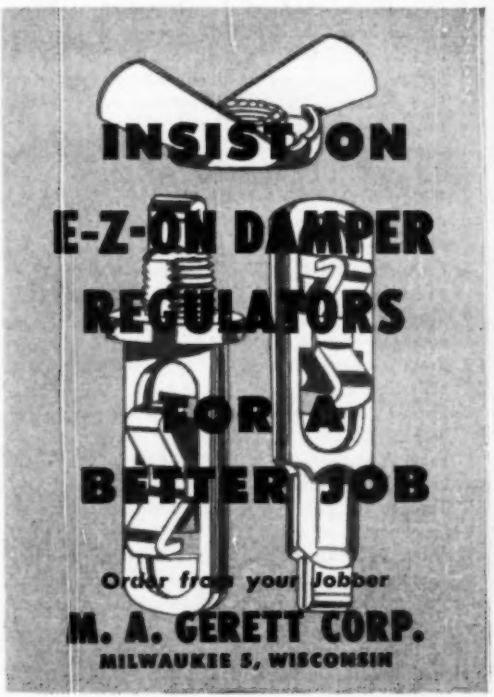

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FOR ATTIC FAN
Built as they can be installed practically flush with the ceiling, AIR-FLO Ceiling Shutters present a refined, finished appearance. Their natural aluminum color blends with any decoration, eliminating need for painting, and no grille or winter cover is required. Furnished in 3 different widths, single panel up to 72" long. No operating mechanisms shown. Built-in fusible link. Meets fire underwriters requirements.
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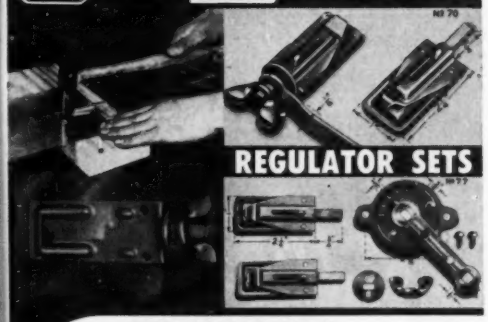
H&C Kwik-way DAMPER



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No. 70 Set	.30¢	No. 50½ Set	.60¢
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6. From the intersection points of the lines drawn from the six equal points and the line *Y-Z*, draw lines parallel to the line *R²-Z* to intersect the lines drawn from points *2,3,4,5,6* as indicated on the short method drawing by directional arrows.
7. Through the developed points, draw the line of intersection of the taper and pipe.
8. Letter the developed lines *A,B,C,D,E,F,G*, as shown.

To lay out the pipe pattern proceed as follows:

1. Draw a horizontal line. On this line establish a point and number the point *7*.
2. From the half circle marked with six unequal spaces, transfer the distances *7,6,5,4,3,2,1* to the horizontal stretch out line and extending on both sides of point *7*.
3. Through the points, draw lines perpendicular to the horizontal stretch out line.
4. Transfer lengths *A,B,C,D,E,F,G* from the simplified method drawing to the corresponding lines on the layout.
5. Through the developed points, draw the outline of the intersecting pipe pattern.

The Taper Pattern

To lay out the pattern for the taper and developed cut out, proceed as follows:

1. Working from the simplified method drawing, set a compass at radius *R²-Z*. Establish the working point *R* and using this point as center, swing a long arc. From point *R*, establish the work line *R-Z*.
2. Calculate the stretch out of the long arc by multiplying the large diameter of the taper by the constant 3.14. From point *Z* on work line *R-Z* and using a flexible rule, measure the calculated pipe circumference around the arc as shown by distance *Z-Z* on the pattern. Draw a line from *Z* to *R*.
3. With *R²-Y* as radius, draw an arc to intersect lines *R-Z* at *Y-Y*.
4. With radii *R²-P, R²-N, R²-M, R²-L, R²-K, R²-J, R²-H*, draw arcs extending on both sides of the center line on the taper pattern.
5. From *N* on the taper line as center, measure arc *S* on both sides of arc *R-N*.
6. From *M* on the taper center line, measure arc *T* on both sides of arc *R-M*.
7. From *L* on the taper center line, measure arc *U* on both sides of arc *R-L*.
8. From *K* on the taper center line, measure arc *V* on both sides of arc *R-K*.
9. From *J* on the taper center line measure arc *W* on both sides of arc *R-J*.
10. Through the developed points, draw the outline of the cut out intersection.

Lay out the collar patterns by the following procedure.

The stretch out for the large and small collar patterns is calculated by multiplying their respective diameters by the constant 3.14.

Add the necessary allowances for seams and joints and mark patterns for fabrication.

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MARSHALLTOWN

ROTARY THROATLESS SHEARS

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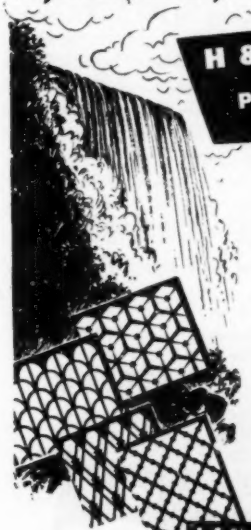

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ORAN COMPANY

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ORAN

Ten Tips to Cost Control Roberts —

(*From page 57*)

prise cash in bank, receivables and inventory. If your inventory is too high, your inventory expense will be too high. You pay too much to insure the stock, to house it, to handle it, the loss on inventory is higher, and you imperil the liquidity of your working capital. Moreover, you may increase interest expense. We found some dealers obligated for loans on which they paid interest because they were carrying an over-load on inventory. Of course, if merchandise gets scarce, the dealer will worry little about the size of his "carry" and stock up as heavily as he can, nevertheless, operating costs will increase when the "carry" is higher than the financial set-up and sales warrant, hence, the dealer should consider this element in his cost control program.

8. ***Better personal supervision over installations and the distribution of equipment, in the office and on deliveries, will reduce overhead expense.*** Often the eye will get what the books won't reveal, and so, the dealer should keep close to all operations and hold frequent conferences with his employees in the interest of economy. Impress them with the necessity for keeping costs down. See that mechanical equipment is inspected regularly and properly lubricated at all times. This reduces the cost of maintenance and repairs.

9. ***Use percentages when making comparative analyses of monthly business figures.*** If you depend entirely upon the dollar figures, you may get the wrong answer when you compare overhead expense from period to period. Always figure sales as 100 per cent, thus if the sales are $50,000 and advertising expense is $500, the ratio to sales is one per cent for this cost. Sometimes an expense can go up in dollars, but down in percentage because sales have increased. For this reason, consider the ratio to sales when appraising the fitness of an expense.

10. *No matter how efficient your expense control, you*

SEE PAGE 15

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LOWER STACK TEMPERATURE AND AMAZING FUEL SAVINGS WITH THIS NEW PRINCIPLE — SWIRLING ACTION — GET THE FACTS.

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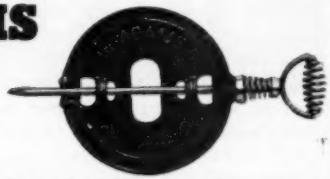
ADAMS



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The small prong on back of plate, tapped with hammer will hold shank in position, leaving both hands free for nailing.

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SEE PAGE 15

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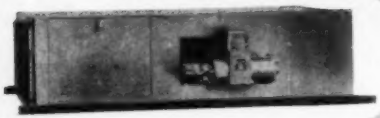
AIR CONDITIONING
FURNACES



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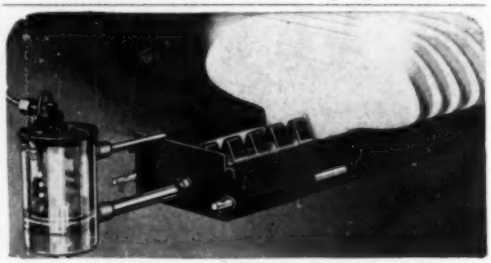

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Konzo —

(*From page* 66)

operations were conducted in the two research homes during the time of the observations. Neither was any artificial humidification carried on in the house. The difference, *D*, between curve *B* and *C* can be considered, therefore, as the increase in relative humidity resulting from moisture inputs due to bathing and from the concrete floors and walls in the basement. It is probable that slightly larger differences in *D* would have been obtained had cooking and laundry operations been conducted as in a normal home. In general, both curves *B* and *C* show the same trends as curve *A*. In other words, it is not possible to maintain any fixed relative humidity, such as 30 per cent, for the entire heating season without some means for dehumidifying in mild weather and humidifying in cold weather. Relative humidities of 40 per cent or greater are obtained in extreme mild weather without any effort. However, as the weather becomes colder, the difference, *E*, between any desired relative humidity and actual humidity increases. This can be done by artificial humidification. Obviously, the humidifying capacity need not be as great if the desired relative humidity is only 25 per cent and not 30 per cent. The need for artificial humidification begins approximately at an outdoor temperature of 30 F. Unfortunately from the standpoint of the heating engineer, curves similar to *B* and *C* are not available for a large number of homes under varying weather conditions and over a wide geographical distribution. In this connection single readings in a given home are not of much value since weather factors, time lag, and occupancy will all affect the readings obtained.

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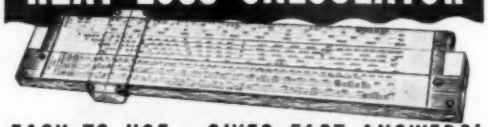

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SEE PAGE 15

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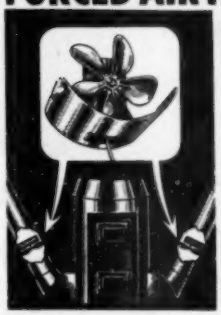

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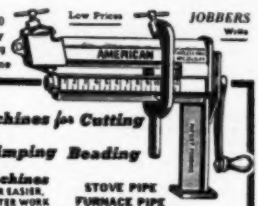

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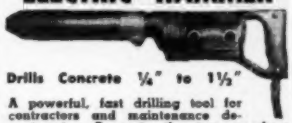

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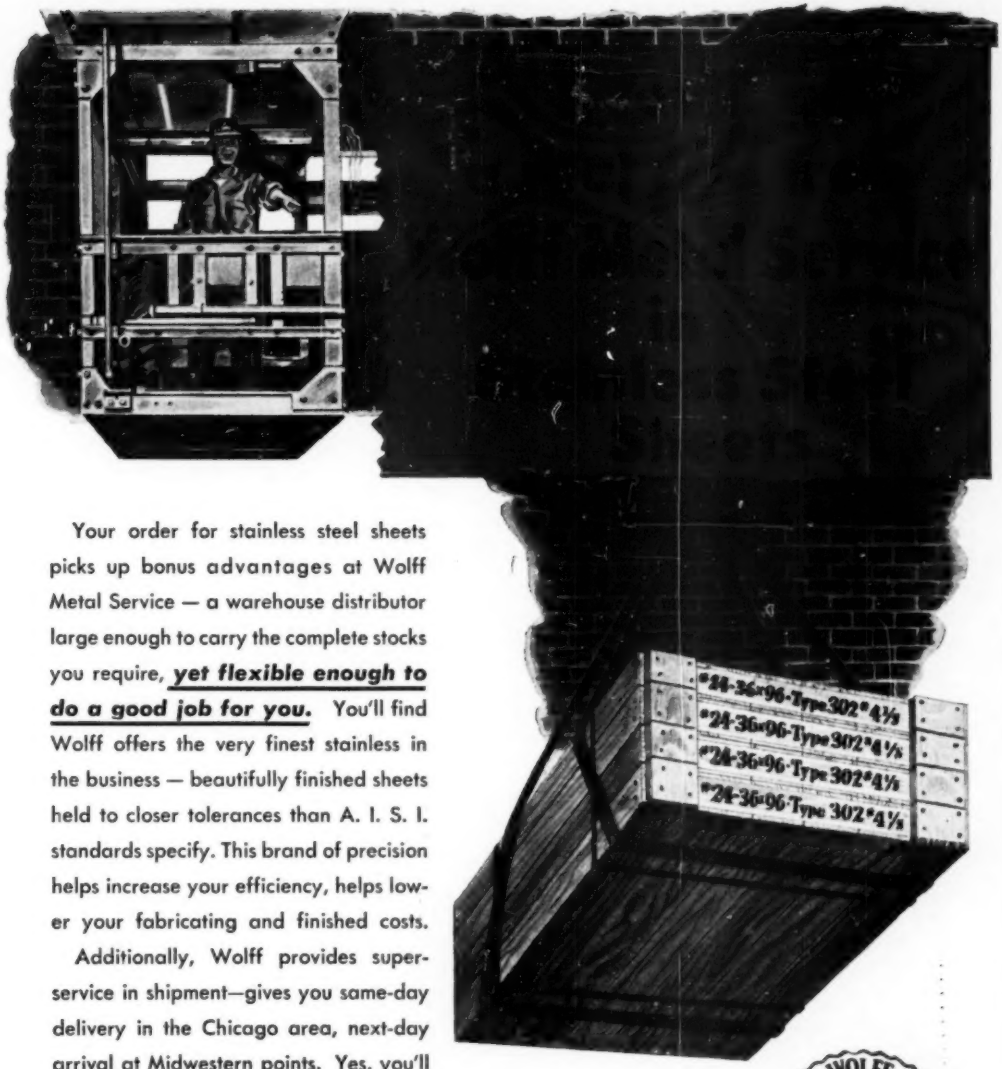

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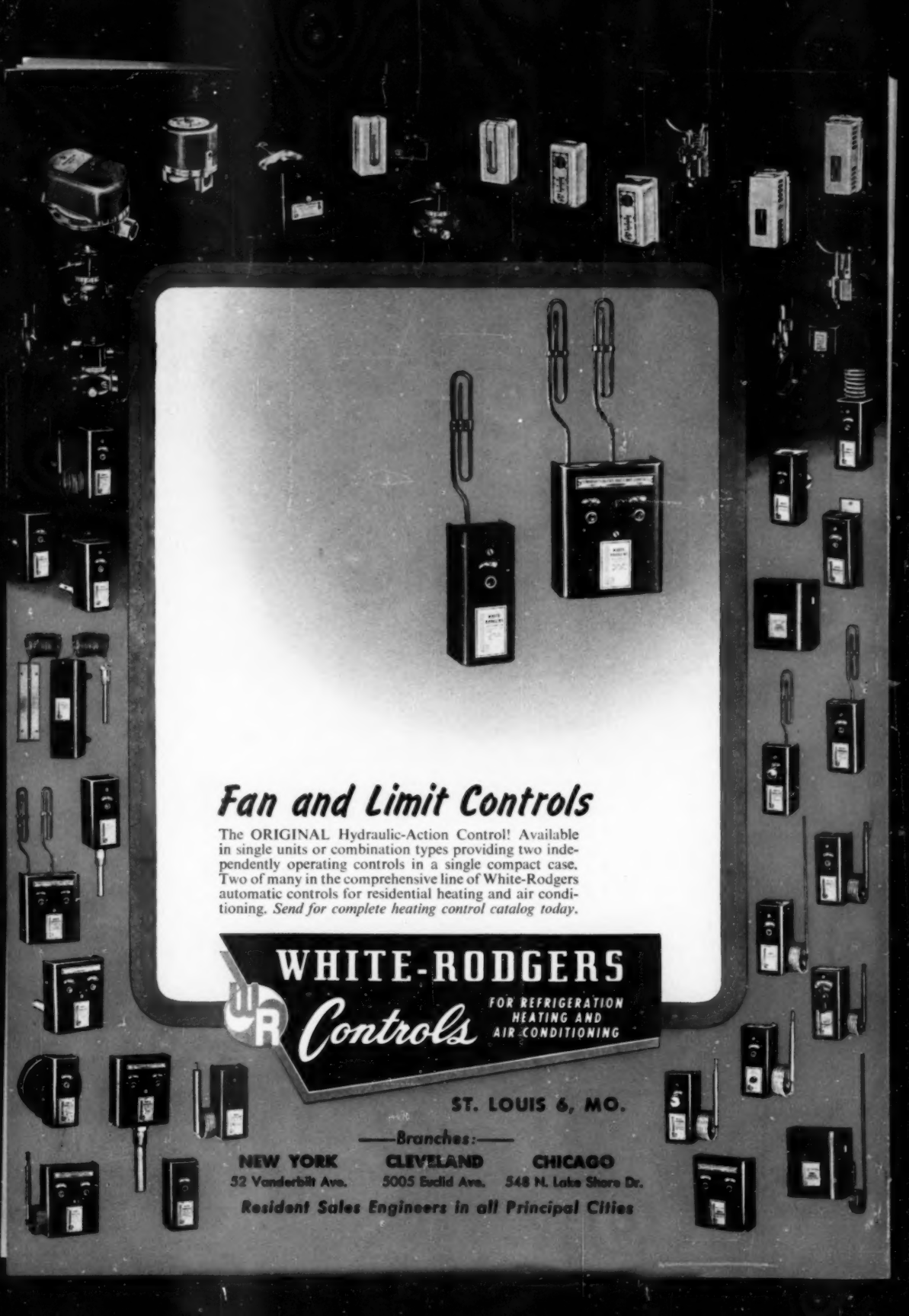
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